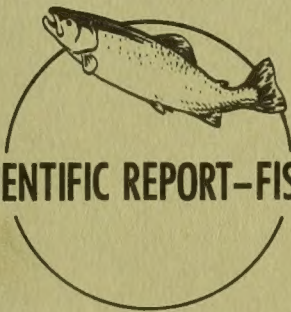
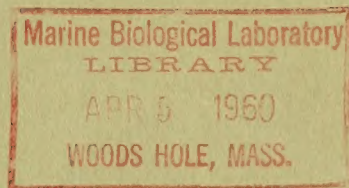


# **NORTH PACIFIC AND BERING SEA OCEANOGRAPHY 1957**



**SPECIAL SCIENTIFIC REPORT-FISHERIES No. 292**



**UNITED STATES DEPARTMENT OF THE INTERIOR  
FISH AND WILDLIFE SERVICE**



#### SPECIAL NOTE

The International North Pacific Fisheries Commission, established in 1953 by the International Convention for the High Seas Fisheries of the North Pacific Ocean, coordinates the research of the member nations: Japan, Canada, and the United States. The resulting investigations provide data to the Commission for use in carrying out its duties in connection with fishery conservation problems in the North Pacific Ocean. Publication of this scientific report has been approved by the United States Section of the Commission.

United States Department of the Interior, Fred A. Seaton, Secretary  
Fish and Wildlife Service, Arnie J. Suomela, Commissioner

NORTH PACIFIC AND BERING SEA OCEANOGRAPHY, 1957

by

Felix Favorite and Glenn M. Pedersen  
Fishery Research Biologists  
Bureau of Commercial Fisheries

Contribution No. 9 to research conducted with  
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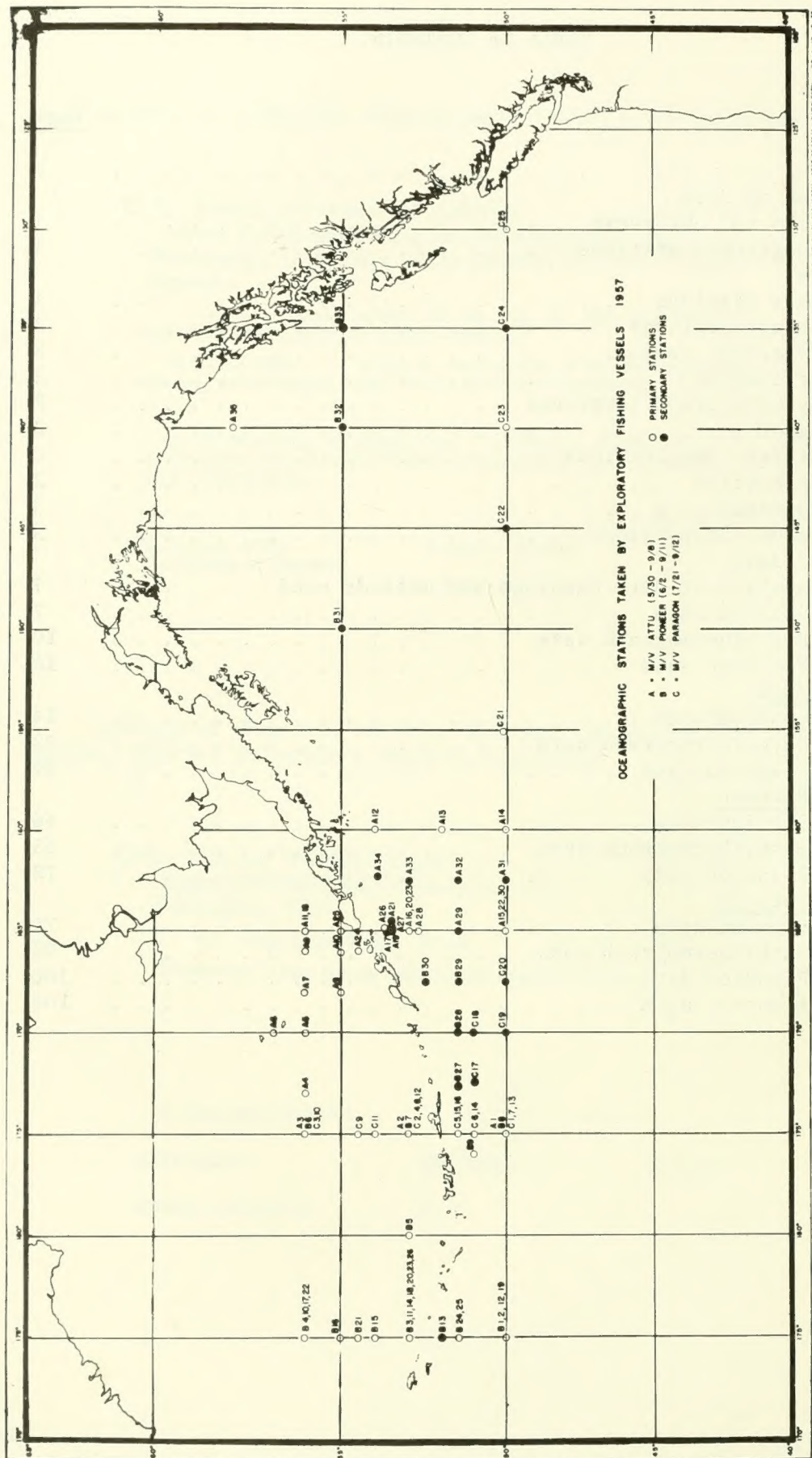


Figure 1.--Oceanographic stations.



# NORTH PACIFIC AND BERING SEA OCEANOGRAPHY, 1957

by

Felix Favorite and Glenn M. Pedersen  
U. S. Fish and Wildlife Service  
Seattle, Washington

## ABSTRACT

This report presents oceanographic data collected at fishing stations in the North Pacific and the Bering Sea from May to September 1957, as a part of the research conducted by the United States Fish and Wildlife Service under the direction of the United States Section of the International North Pacific Fisheries Commission.

The report also describes procedures and shows stations occupied by the fishing vessels Attu, Pioneer, and Paragon. The tabulated data show temperature, and values of salinity, density, dissolved oxygen, and dissolved inorganic phosphate at varying depths to 1100 meters; number, time, and position of drift bottle releases; time, position, and weather and sea conditions for bathythermograph lowerings; and displacement volumes and numbers of organisms per cubic meter of water for the vertical plankton hauls.

## COLLECTION OF DATA

### Vessels and Observers

Three halibut schooners, the M/Vs Attu, Pioneer, and Paragon, chartered by the Pacific Salmon Investigations to determine the distribution and migration of salmon in the North Pacific and the Bering Sea, collected oceanographic data in conjunction with exploratory fishing. The specifications of this type of vessel have been presented by Powell and Peterson in Experimental Fishing to Determine Distribution of Salmon in the North Pacific Ocean, 1955, Special Scientific Report--Fisheries No. 205, Washington, D. C., July 1957. The vessels were equipped with portable hydrographic winches and davits to facilitate handling the oceanographic equipment: Nansen bottles, bathythermographs, and plankton nets.

The vessels, periods of operation, and oceanographic observers are as follows:

<u>Attu</u>	29 May - 8 Sept.	Glenn M. Pedersen
<u>Pioneer</u>	2 June - 11 Sept.	John W. Schantz
<u>Paragon</u>	27 July - 12 Sept.	Alan H. Haselwood

### Oceanographic Stations

The vessels, following a predetermined plan for fishing, observed primary oceanographic stations at fishing locations, at secondary stations between the fishing locations, and at other positions designed to supplement primary-station data. Stations occupied by the three vessels are shown in figure 1, and the observations are summarized in tables 1, 2, and 3 (pages 4, 5, and 6).

## PROCEDURE

### Primary Stations

At primary stations, the observations included hydrographic casts to the bottom or to a maximum of 1100 meters, a 900-foot BT, and a horizontal tow and vertical hauls for plankton.

When the conditions of observation were relatively ideal, the itinerary of the vessel was adjusted to arrive on station in time to set the gill nets between 1600 and 1800. A set at this time normally allowed the oceanographic observer time to complete the routine between 2200 and 2400.



Prior to the setting of the nets the routine began with a 20-minute surface plankton haul on a circular course. Then the gill nets were set and the remainder of the oceanographic routine was accomplished while the vessel was moored to the downwind end of the net.

The deep cast required an hour or more, depending on the adversity of the weather and sea conditions. When the biologist was able to assist with the vertical plankton hauls, these were made between hydrographic casts after taking and analyzing the 900-foot BT trace. Without this assistance the plankton hauls were made after the shallow cast. Thus the plankton hauls, shallow cast, and BT trace were usually made within an hour of each other.

### Secondary Stations

Secondary stations, taken between fishing stations without interrupting the cruise plan, consisted of a 900-foot BT and one shallow cast to 125, 150, or 170 meters. These stations were taken at the 1000-fathom curve on north-south transits through the Aleutian Passages, and at various locations on the return voyages when weather permitted.

### Hydrographic Casts

The observers made two casts of seven Nansen bottles at primary stations. Early spacing was 10, 20, 30, 50, 80, 110, and 140 meters for the shallow cast and 170, 200, 250, 300, 500, 800, and 1100 for the deep cast. These were later changed to 10, 20, 30, 50, 75, 100, 125, and 150, 175, 200, 300, 500, 800, 1100 meters in order to obtain more data in the upper 200 meters of the water column.

Each Nansen bottle had two protected reversing thermometers. Three or four bottles in each cast had an unprotected thermometer, usually in positions 1, 5, 7 or 1, 4, 5, 7.

### Water Samples

On each station and at every BT lowering, the observers dipped surface samples by bucket. They drew samples for analysis of dissolved oxygen and phosphate from four alternate depths in each cast, and for chlorinity from all depths; they collected some

phosphate samples also from the surface.

### Bathythermograph Lowerings

Using 900-foot BT's almost exclusively, the observers obtained traces at every hydrographic station and at intervals of 20-30 miles enroute between stations, collecting a total of 669 traces. The vessels stopped for each lowering.

### Plankton

Plankton samples were taken from both horizontal tows and vertical hauls with 1/2-meter nets of #6 mesh.

The horizontal tow was made at the surface at a speed of about 3 knots for a period of 20 minutes. The data from these tows are not presented because early in the cruises considerable amounts of phytoplankton were obtained that prevent any quantitative analysis of zooplankton, and the tows were discontinued because of repeated damage to the nets. Visual examination of the samples obtained indicate no significant qualitative difference from the upper vertical haul.

Three vertical hauls were made to determine vertical distribution of plankton. Hauls from 300 meters to the surface, from 300 meter to the bottom of the thermocline, and from the thermocline to the surface, were made at a velocity of approximately 50 meters per minute. However, individual interpretations of the BT traces do not rigorously define the bottom of the thermocline, and station data should be used to determine the relative position in the thermocline at which the latter two hauls were commenced or terminated.

### Nightlight Observations

Because of generally unsatisfactory weather and sea conditions, only a few nightlight samples were collected. They have not been tabulated.

### Drift Bottles

A total of 473 drift bottles were released individually in groups of 24 or 48 at various locations which are presented in table 4 (page 106). Figure 2 shows a sample bottle. Each group of 24 had a single serial number.



## ACKNOWLEDGMENTS

The authors wish to acknowledge the assistance of Dr. Richard H. Fleming and members of the Department of Oceanography of the University of Washington in establishing the Oceanographic Section of the Pacific Salmon Investigations, and in equipping the charter vessels for the oceanographic work.

We are indebted to Ralph W. Riley for assisting in the chemical analyses and Phillip Seelinger for the plankton analyses.

Acknowledgment is made to the Fisheries Research Biologists and crew members aboard the respective vessels for their assistance to the field personnel, and to the members of our staff that participated

in the processing and presentation of these data.

## SUMMARIES OF OBSERVATIONS

Sta.	Hydrographic station
Set	Gill-net-set numbers at this position
GCT	Median hour between messenger times, in GCT (For median hour of plankton hauls, see Plankton Data)
Date	Date of hydrographic cast
D	Interpolated depth in meters (Extrapolated depths enclosed in parentheses)
BT	Bathymograph lowering
T	Temperatures
Cl	Chlorinity samples
O	Dissolved oxygen samples
P	PO <sub>4</sub> -P samples
P1	Plankton samples
1	Horizontal haul
2	300 m. to thermocline
3	thermocline to surface
4	300 m. to surface
5	1, 2, 3, 4

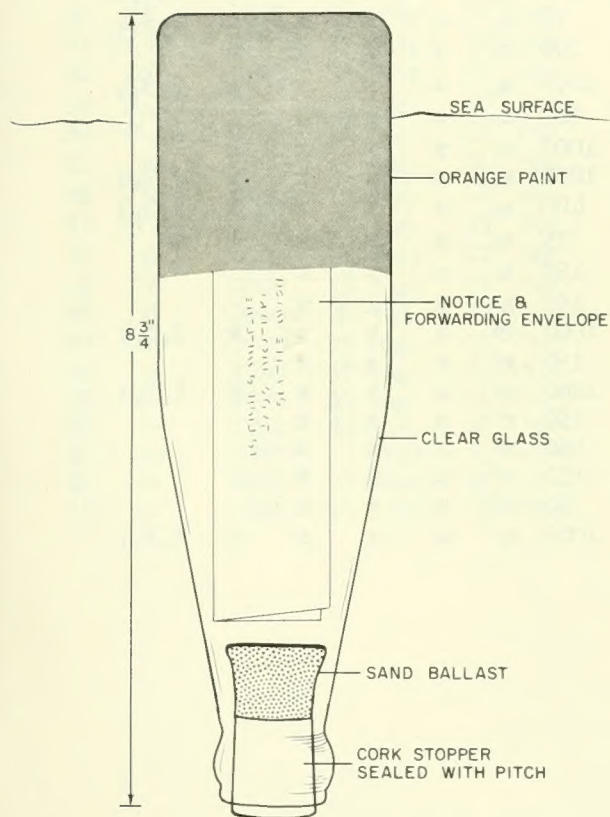


Figure 2.--U. S. Fish and Wildlife Service drift bottle.

Table 1

## SUMMARY OF OBSERVATIONS

M/V Attu

Sta.	Set	GUT	Date	Lat. N.	Long. W.	D	BT	T	CL	O	P	Pl
1	1,2,3	0700	30 May	50° 00'	175° 00'	1000	x	x	x	x	x	5
2	4,5,6	0700	8 June	53° 00'	175° 00'	(800)	x	x	x	x	x	5
3	7	0400	15 June	56° 00'	175° 00'	(1000)	x	x	x	x	x	2,3,4,5
4	8	0800	16 June	56° 00'	175° 00'	600	x	x	x	x	x	2,3,4,5
5	9,11	0400	18 June	56° 00'	170° 00'	100	x	x	x	x	x	2,3,4,5
6	10	0400	19 June	56° 52'	170° 00'	50	x	x	x	x	x	4
7	12	0900	21 June	56° 00'	168° 00'	100	x	x	x	x	x	4
8	13	0400	22 June	55° 00'	168° 00'	1000	x	x	x	x	x	2,3,4,5
9	14	0700	23 June	56° 00'	166° 00'	(100)	x	x	x	x	x	4
10	15	0400	24 June	55° 00'	166° 00'	100	x	x	x	x	x	2,3,4,5
11	16,17,18	0400	8 July	56° 00'	165° 00'	75	x	x	x	x	x	5
12	19	0600	15 July	54° 00'	160° 00'	1000	x	x	x	x	x	5
13	20	0600	17 July	52° 00'	160° 00'	1000	x	x	x	x	x	5
14	21	0400	19 July	50° 00'	160° 00'	1000	x	x	x	x	x	1,3,4
15	22	0400	21 July	50° 00'	165° 00'	1000	x	x	x	x	x	1,3,4
16	23	0500	24 July	53° 00'	165° 00'	1000	x	x	x	x	x	3,4
17	24	0600	25 July	53° 40'	165° 02'	100	x	x	x	x	x	1,3,4
18	25,26,27	0400	27 July	56° 00'	165° 00'	75	x	x	x	x	x	2,3,4
19	—	1600	29 July	53° 31'	165° 00'	100	x	x	x	x	x	
20	28,29	0400	30 July	53° 00'	165° 00'	1000	x	x	x	x	x	2,3,4
21	—	1200	7 Aug.	53° 32'	164° 30'	100	x	x	x	x	x	
22	30	0400	9 Aug.	50° 00'	165° 00'	1000	x	x	x	x	x	
23	31	0800	11 Aug.	53° 00'	165° 00'	1000	x	x	x	x	x	2,3,4
24	32	0500	14 Aug.	54° 30'	166° 00'	400	x	x	x	x	x	2,3,4
25	33	0400	15 Aug.	55° 00'	165° 00'	75	x	x	x	x	x	4
26	—	1100	16 Aug.	53° 44'	164° 50'	150	x	x	x	x		
27	—	1500	16 Aug.	53° 31'	164° 50'	150	x	x	x	x		
28	34	0600	18 Aug.	52° 43'	165° 00'	1000	x	x	x	x	x	2,3,4
29	—	1100	19 Aug.	51° 30'	165° 00'	150	x	x	x	x		
30	35,36	0400	20 Aug.	50° 00'	165° 00'	1000	x	x	x	x	x	2,3,4
31	—	0900	22 Aug.	50° 00'	162° 30'	150	x	x	x	x		
32	—	2200	22 Aug.	51° 30'	162° 30'	150	x	x	x	x		
33	—	1000	23 Aug.	53° 00'	162° 30'	150	x	x	x	x		
34	—	1800	23 Aug.	53° 56'	162° 20'	150	x	x	x	x		
35	37	0400	8 Sept.	58° 00'	140° 00'	1000	x	x	x	x	x	2,3,4



Table 2

## SUMMARY OF OBSERVATIONS

M/V Pioneer

Sta.	Set	GMT	Date	Lat.	Long.	D	BT	T	CL	O	P	PI
1	—	0500	2 June	50° 00'	175° 00' E.	1000	x	x	x			5
2	1,2,3	0100	10 June	50° 00'	175° 00' E.	1000	x	x	x	x		5
3	1,5	0200	14 June	53° 00'	175° 00' E.	1000	x	x	x	x		5
4	—	0100	17 June	56° 00'	175° 00' E.	1000	x	x	x	x		5
5	6	0100	22 June	53° 00'	180° 00' (1000)		x	x	x	x		5
6	7,8	0100	30 June	56° 00'	175° 00' W.	(500)	x	x	x	x		1
7	9,10	0100	3 July	53° 00'	175° 00' W.	1000	x	x	x	x		5
8	11,12	2300	5 July	50° 00'	175° 00' W.	1000	x	x	x	x		5
9	13	0800	8 July	51° 00'	176° 00' W.	(1000)	x	x	x	x		1
10	14	0500	16 July	56° 00'	175° 00' E.	(800)	x	x	x			5
11	15	2300	18 July	53° 00'	175° 00' E.	1000	x	x	x	x		2,3,4
12	16,17	0400	21 July	50° 00'	175° 00' E.	1000	x	x	x	x	x	2,3,4
13	18	0400	23 July	52° 00'	175° 00' E.	125	x	x	x	x		4
14	19	0700	24 July	53° 00'	175° 00' E.	800	x	x	x	x		2,3,4
15	20	0500	25 July	54° 00'	175° 00' E.	(1000)	x	x	x	x		2,3,4
16	21	0600	26 July	55° 00'	175° 00' E.	1000	x	x	x	x	x	2,3,4
17	22,23,24	0600	27 July	56° 00'	175° 00' E.	(1000)	x	x	x	x		2,3,4
18	25	0100	30 July	53° 00'	175° 00' E.	1000	x	x	x	x		2,3,4
19	26,27	0700	8 Aug.	50° 00'	175° 00' E.	1000	x	x	x	x	x	2,3,4
20	28,29	0700	11 Aug.	53° 00'	175° 00' E.	1000	x	x	x	x	x	2,3,4
21	30	2000	13 Aug.	54° 30'	175° 00' E.	1000	x	x	x	x		
22	31	0100	15 Aug.	56° 00'	175° 00' E.	1000	x	x	x	x		
23	32,33	0100	17 Aug.	53° 00'	175° 00' E.	1000	x	x	x	x		2,3,4
24	34	0600	19 Aug.	51° 30'	175° 00' E.	1000	x	x	x	x	x	
25	36	0600	23 Aug.	51° 30'	175° 00' E.	1000	x	x	x	x		2,3,4
26	37	0900	24 Aug.	53° 00'	175° 00' E.	1000	x	x	x	x		
27	—	2000	29 Aug.	51° 30'	172° 39' W.	150	x	x	x	x		
28	—	1000	30 Aug.	51° 30'	169° 58' W.	150	x	x	x	x		
29	—	2200	30 Aug.	51° 30'	167° 30' W.	150	x	x	x	x		
30	—	0700	31 Aug.	52° 30'	167° 30' W.	150	x	x	x	x		
31	38	0700	7 Sept.	55° 00'	150° 00' W.	150	x	x	x	x		
32	—	2000	9 Sept.	55° 00'	140° 00' W.	150	x	x	x	x		
33	—	0300	11 Sept.	55° 00'	135° 00' W.	150	x	x	x	x		

Table 3

## SUMMARY OF OBSERVATIONS

H/V Paragon

Sta.	Set	GCT	Date	Lat. N.	Long. W.	D	BT	T	CL	()	P	Pl
1	1,2	1000	21 July	50°00'	175°00'	100	x	x	x	x		5
2	3,4	0500	24 July	53°00'	175°00'	150	x	x	x	x		5
3	5,6,7	0600	27 July	56°00'	175°00'	1000	x	x	x	x		5
4	8,9,10	0700	30 July	53°00'	175°00'	150	x	x	x			5
5	11	1800	6 Aug.	51°30'	175°00'	1000	x	x	x	x		2,3,4
6	12	0400	7 Aug.	51°00'	175°00'	1000	x	x	x	x		2,3,4
7	13,14	0700	8 Aug.	50°00'	175°00'	1000	x	x	x	x		2,3,4
8	15	0600	12 Aug.	53°00'	175°00'	1000	x	x	x	x	x	2,3,4
9	16	0800	13 Aug.	54°30'	175°00'	1000	x	x	x	x		4
10	17	0600	15 Aug.	56°00'	175°00'	150	x	x	x	x		2,3,4
11	18	0700	16 Aug.	54°00'	175°00'	800	x	x	x			2,3,4
12	19,20	0600	17 Aug.	53°00'	175°00'	500	x	x	x	x	x	2,3,4
13	21,22	0500	20 Aug.	50°00'	175°00'	1000	x	x	x	x	x	2,3,4
14	23	0600	22 Aug.	51°00'	175°00'	1000	x	x	x	x	x	2,3,4
15	24	0700	23 Aug.	51°30'	175°00'	1000	x	x	x	x	x	4
16	--	1300	29 Aug.	51°30'	175°00'	150	x	x	x	x		
17	--	0400	30 Aug.	51°00'	172°30'	150	x	x	x	x		
18	--	1700	30 Aug.	51°00'	170°00'	150	x	x	x	x		
19	--	0200	31 Aug.	50°00'	170°00'	150		x	x	x		2,3,4
20	--	1900	31 Aug.	50°00'	167°30'	150		x	x	x		2,3,4
21	--	2200	3 Sept.	50°04'	155°09'	1000		x	x	x		2,3,4
22	--	0500	7 Sept.	50°00'	145°00'	150		x	x	x		
23	--	0800	8 Sept.	50°02'	140°00'	1000		x	x	x		
24	--	0200	10 Sept.	50°00'	135°00'	300	x	x	x	x		
25	--	0500	12 Sept.	50°00'	130°00'	1000	x	x	x	x		



## TABULATED DATA

### Explanation of Data Headings and Methods Used

#### Station Data

##### Observed Data

Station No.: The chronological order in which the stations were taken. Equivalent gill net sets are listed in Table 2.

Lat., Long.: In all cases determined by loran readings and in some cases supplemented by celestial sights.

Time: The Time (GCT) at which the messenger was released. The second time indicates messenger time of second cast or, in case of more than two casts, the time of the final cast.

Weather, Clouds, Sea, Swell: Coded values as presented in HO 606-C, Bathythermograph Observations.

Wet and Dry Bulbs: Readings from hygrometer.

Depth (m): Depths of bottles in shallow cast determined by wire angle. In the deep cast, the difference between the thermometric depths (Z) and the meter wheel readings (L) were plotted against the meter wheel readings (L). From the smoothed curve, values of L-Z were subtracted from the wire length for each bottle depth to obtain the observed depth. Parentheses indicate the approximate depth of a bottle without an unprotected thermometer, on a cast that post-tripped.

- T ( $^{\circ}\text{C}$ ): Temperatures observed from reversing thermometers read to  $0.01^{\circ}\text{C}$ . Surface temperatures from bucket samples are reported to  $0.1^{\circ}\text{C}$ . Temperatures at depth reported to  $0.1^{\circ}\text{C}$  were read from the BT trace.
- S ( $^{\circ}/\infty$ ): Salinity as defined from chlorinity. Chlorinity determined by Knudsen's method using double titration except that samples from the Paragon were checked only periodically.
- O<sub>2</sub> ( $\mu\text{gat/L}$ ): Dissolved oxygen content expressed as milligram-atoms per liter to two decimal places. These samples were fixed on board and shipped to Seattle for analysis by the Winkler method.
- PO<sub>4</sub> -P ( $\mu\text{gat/L}$ ): Dissolved inorganic phosphate expressed in microgram-atoms per liter to the nearest 0.1 of a unit. Determined on board within two hours of sampling by Deniges-Atkins method using Nessler tubes. Standard comparison solutions of 0.3, 0.6, 0.9, 1.2, 1.5, 1.8, 2.1, 2.4, 2.7, 3.0, 3.3 and 3.6  $\mu\text{gat/L}$  were used. Values of samples not compared within two hours were discarded.



## Interpolated Data at Standard Depths

All interpolated values were taken from smoothed curves drawn from observed data which were supplemented by BT data and in some instances by comparison with adjoining or previous stations. Parentheses indicate extrapolated values.

Depth (m): Standard depth in meters.

T (°C): Interpolated values at standard depths.

S (°/00): Interpolated values at standard depths.

## Computed Data at Standard Depths

Calculations were done on an IBM 650, Magnetic Drum Data-Processing Machine, at the computer center of the University of Washington, using formulas presented in Oceanographic Data Processing by Automatic Methods, U. S. Hydrographic Office, 31 January 1955.

$\sigma_T$ : Density, defined by  $(\text{specific gravity} - 1) \times 1000$ , expressed as grams per liter.

$\Delta D$ : Anomaly of dynamic height, in dynamic meters, of the sea surface relative to the indicated depth in meters.

## Bathythermograph Data

Wind                      Direction reported to nearest ten degrees  
                            (Final cipher omitted)  
                            Force estimated in knots

Air Temp.    Wet and dry bulb readings from hygrometer

(Following coded values taken from HO 606-C, Bathythermograph Observations)

### Weather

00-49    No precipitation at the ship at the time of observation

00-19    No precipitation, fog, dust storm, sandstorm or drifting snow at the ship at the time of observation or during the preceding hour except for 09.

00       Cloud development not observed or not observable.

01       Clouds generally dissolving or becoming less developed.

02       State of sky on the whole unchanged.

03       Clouds generally forming or developing.

10       Light fog (visibility 1100 yards or more).

11       Patches of fog.

18       Squalls

20-29    Precipitation, fog or thunderstorm at the ship during the preceding hour but not at the time of observation.

20       Drizzle, not freezing.

21       Rain, not freezing.

40-49    Fog at the time of observation

40       Fog at a distance at the time of observation, but not at the ship during the last hour, the fog extending to a level above that of the observer.

41       Fog in patches.

42       Fog, sky discernible                      (Has become thinner

43       Fog, sky not discernible ) during preceding hour

44       Fog, sky discernible                      ( No appreciable change

45       Fog, sky not discernible                      ) during preceding hour

46       Fog, sky discernible                      ( Has begun or has become thicker

47       Fog, sky discernible                      ) during preceding hour

48       Fog, depositing rime, sky discernible

49       Fog, depositing rime, sky not discernible

50-99    Precipitation at the ship at the time of observation

50-59    Drizzle at time of observation

50       Drizzle, not freezing, intermittent    ( Slight at time of

51       Drizzle, not freezing, continuous       ) observation

52       Drizzle, not freezing, intermittent       { Moderate at time

53       Drizzle, not freezing, continuous       } of observation



60-69	Rain at time of observation	
60	Rain, not freezing, intermittent	{ Slight at time of observation (Moderate at time of )observation
61	Rain, not freezing, continuous	
62	Rain, not freezing, intermittent	
63	Rain, not freezing, continuous	

Cloud Type

0	Stratus or fractostratus
1	Cirrus
2	Cirrostratus
3	Cirrocumulus
4	Alto cumulus
5	Altostratus
6	Stratocumulus
7	Nimbostratus
8	Cumulus or fracto cumulus
9	Cumulonimbus

Cloud Amount

0	No clouds
1	Less than 1/10, or 1/10
2	2/10 and 3/10
3	4/10
4	5/10
5	6/10
6	7/10 and 8/10
7	9/10 and 9/10 plus
8	10/10
9	Sky obscured

Sea

0	Flat calm
1	Less than 1 foot
2	1 to 3 feet
3	3 to 5 feet
4	5 to 8 feet
5	8 to 12 feet
6	12 to 20 feet
7	20 to 40 feet
8	40 feet and over
9	Very rough, confused sea

Swell

0	0
1	{ 1 - 6 feet
2	
3	{ 6 - 12 feet
4	
5	
6	{ Greater than 12
7	
8	
9	

## Plankton Data

These data are presented as numbers of organisms and as numbers of copepods per cubic meter of water filtered, the efficiency of the net assumed to be 100%. The total number of copepods is presented under COPEPODA in the table of organisms.

Displacements volumes (cc): The plankton sample was filtered through a fine mesh net, dried by blotting, and placed in a graduated cylinder containing a known volume of fluid.

Numbers of organisms per cubic meter: The plankton samples were split by using a Folsom splitter described in Statistical Analysis of the Performance of the Folsom Plankton Splitter, Based on Test Observations, by G. F. McEwen, M. W. Johnson, and Th. R. Folsom, Archive fur Meteorologie Geophysik und Bioklimatologie, Series A, Meteorologie und Geophysik, Band 7, 1954. The number of splits varied from 1-7, depending on the volume of the plankton sample.

The number of organisms counted averaged approximately 400 per sample.

### Presentation of Data

DATE/HOUR	Day and median hour (GCT) of plankton hauls
t	Less than one organism per cubic meter, and not computed in the total
*	Excessive phytoplankton
( )	Sample taken from torn net



TABULATED DATA, M/V Attu

Station Data

Bathymograph Data

Plankton Data

# Oceanographic Station Data, M/V Attu

Station 1: 50°00'N., 175°00'W., 30 May 1957. Messenger time: 0620, 0747 GCT. Weather 02. Clouds: type 9, amt. 9. Wind: 160°T, 15 kts. Sea 4. Swell 2. Bar. 1008 mbs. Temp: dry 44.3°F, wet 44.2°F. BT 7.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	5.8	32.93			0	5.8	32.93	25.56	.000
10	5.58	32.93	.64	1.1	10	5.58	32.93	25.59	.020
20	5.58	32.93			20	5.58	32.93	25.59	.041
30	5.40	32.94	.64	1.3	30	5.40	32.94	26.02	.061
50	5.11	32.94			50	5.11	32.94	26.06	.100
80	4.87	32.94	.63	1.4	75	4.90	32.94	26.08	.149
164	3.76	33.71	.28	2.1	100	4.62	32.98	26.14	.197
194	3.64	33.81			150	3.98	33.57	26.67	.279
244	3.57	33.86	.17	2.0	200	3.62	33.82	26.91	.343
293	3.57	33.95			250	3.57	33.87	26.95	.401
496	3.46	34.16	.06	2.0	300	3.57	33.96	27.02	.456
804	3.00	34.31			400	3.51	34.07	27.12	.558
1124	2.30	34.44	.07	2.3	500	3.45	34.16	27.20	.653
					600	3.32	34.22	27.26	.743
					700	3.19	34.26	27.30	.828
					800	3.01	34.31	27.36	.908
					1000	2.60	34.39	27.46	1.055

Station 2; 53°00'N., 175°00'W., 8 June 1957. Messenger time: 0632, 0800 GCT. Weather 01. Clouds: type 6, amt. 6. Wind: 050°T, 5 kts. Sea 2. Swell 1. Bar. 1013 mbs. Temp: dry 45.0°F, wet 44.0°F. BT 20.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	5.8	33.19			0	5.8	33.19	26.17	.000
10	5.64	33.19	.70	0.7	10	5.64	33.19	26.19	.018
20	5.20	33.19			20	5.20	33.19	26.24	.037
30	5.07	33.19	.67	0.9	30	5.07	33.19	26.26	.054
50	4.85	33.20			50	4.85	33.20	26.29	.090
80	3.19	33.26	.63	1.3	75	3.35	33.26	26.49	.131
110	2.77	33.26			100	2.81	33.26	26.54	.169
140	2.82	33.31	.58	1.6	150	2.98	33.36	26.60	.243
166	3.35	33.43	.49	1.2	200	3.57	33.63	26.76	.312
195	3.56	33.60			250	3.67	33.78	26.87	.375
244	3.66	33.77	.20	1.8	300	3.70	33.89	26.96	.434
292	3.69	33.87			400	3.60	34.02	27.07	.542
488	3.47	34.10		3.0	500	3.45	34.10	27.15	.641
780	3.12	34.29			600	3.34	34.17	27.21	.735
					700	3.22	34.22	27.27	.824
					800	(3.10)	(34.30)	27.34	.907



# Oceanographic Station Data, M/V Attu

Station 3: 56°00'N., 175°00'W., 15 June 1957. Messenger time: 0327, 0446 GCT. Weather 02. Clouds: type 6, amt. 9. Wind: 320°T, 5 kts. Sea 1. Swell 1. Bar. 1016 mbs. Temp: dry 43.0°F, wet 42.0°F. BT 29.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	5.8	32.94			0	5.8	32.94	25.97	.000
10	5.83	32.92	.63	0.8	10	5.83	32.92	25.95	.021
20	5.80	32.92			20	5.80	32.92	25.96	.041
30	4.70	33.00	.65	1.0	30	4.70	33.00	26.15	.061
50	4.36	33.12			50	4.36	33.12	26.28	.097
80	3.48	33.15	.56	1.6	75	3.50	33.14	26.38	.140
110	3.45	33.22			100	3.45	33.20	26.43	.181
140	3.60	33.28	.48	1.7	150	3.63	33.32	26.51	.260
166	3.70	33.40	.39	2.0	200	3.78	33.49	26.63	.334
195	3.78	33.48			250	3.78	33.62	26.74	.403
244	3.78	33.59	.29	2.4	300	3.74	33.74	26.83	.468
293	3.75	33.72			400	3.60	33.96	27.02	.584
489	3.45	34.03	.11	2.6	500	3.42	34.04	27.10	.688
(614)	3.28	34.12			600	3.28	34.11	27.17	.786
844	2.94	34.27	.05	2.7	700	3.14	34.18	27.24	.877
					800	3.00	34.24	27.30	.963
					1000	(2.73)	(34.38)	27.44	1.118

Station 4: 56°00'N., 173°00'W., 16 June 1957. Messenger time: 0707, 0819 GCT. Weather 02. Clouds: type 6, amt. 9. Wind: 200°T, 1 kt. Sea 1. Swell 1. Bar. 1019 mbs. Temp: dry 45.0°F, wet 44.0°F. BT 32.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	6.9	32.72			0	6.9	32.72	25.66	.000
10	6.38	32.76	.68	0.6	10	6.38	32.76	25.76	.023
20	5.30	32.89			20	5.30	32.89	25.99	.044
30	5.12	32.95	.63	1.0	30	5.12	32.95	26.06	.064
50	3.66	32.98			50	3.66	32.98	26.24	.102
80	3.46	33.11	.54	1.6	75	3.38	33.09	26.35	.145
140	3.50	33.25	.49	1.8	100	3.40	33.16	26.40	.187
170	3.56	33.34	.44	1.8	150	3.51	33.28	26.49	.267
200	3.66	33.43			200	3.66	33.43	26.59	.342
249	3.72	33.50	.34	1.7	250	3.72	33.50	26.64	.415
297	3.78	33.68			300	3.78	33.68	26.78	.483
(315)	3.74	33.73	.24	1.8	400	3.64	33.90	26.97	.604
(360)	3.63	33.87			500	3.49	34.03	27.09	.711
599	3.32	34.12	.09	2.3	600	3.32	34.12	27.18	.809

# Oceanographic Station Data, M/V Attu

Station 5: 56°00'N., 170°00'W., 18 June 1957. Messenger time: 0420 GCT.  
 Weather 02. Clouds: type 6, amt. 9. Wind: 070°T, 12 kts. Sea 3. Swell 1.  
 Bar. 1017 mbs. Temp: dry 46.0°F, wet 45.8°F. BT 37.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/∞)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/∞)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	7.4	32.74	-	-	0	7.4	32.74	25.61	.000
10	7.23	32.73	.77	0.2	10	7.23	32.73	25.62	.024
20	6.10	32.67	.68	0.5	20	6.10	32.67	25.72	.047
30	5.02	32.72	.66	0.6	30	5.02	32.72	25.89	.069
50	4.08	32.87	.59	1.4	50	4.08	32.87	26.11	.110
80	3.51	33.03	.55	1.7	75	3.55	33.01	26.27	.156
110	3.51	33.12	.51	1.7	100	3.51	33.09	26.34	.199
140	3.50	33.13	.50	1.7					

Station 6: 56°52'N., 170°00'W., 19 June 1957. Messenger time: 0427 GCT.  
 Weather 01. Clouds: type 3, amt. 4. Wind: 090°T, 4 kts. Sea 2.  
 Swell 1. Bar. 1020 mbs. Temp: dry 48.0°F, wet 47.0°F. BT 38.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/∞)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/∞)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	7.0	32.13	-	-	0	7.0	32.13	25.18	.000
5	6.45	32.12	.61	0.0	10	6.05	32.12	25.30	.027
10	6.05	32.12	.69	0.0	20	4.00	32.27	25.64	.053
15	4.30	32.24	.78	0.1	30	3.28	32.28	25.72	.076
25	3.30	32.28	.70	0.2	50	3.28	32.28	25.72	.122
35	3.26	32.28	.69	0.2					
45	3.28	32.28	.67	0.3					
55	3.28	32.28	.69	0.3					



# Oceanographic Station Data, H/V Attu

Station 7: 36°00'N., 168°00'W., 21 June 1957. Messenger time: 0854 GMT.  
 Weather 02. Clouds: type 6, amt. 9. Wind: 020<sup>at</sup>, 4 kts. Sea 2.  
 Swell 1. Bar. 1016 mbs. Temp: dry 43.5°F, wet -- BT 42.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (μg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	7.9	32.14	-	-	0	7.9	32.14	25.07	.000
10	7.87	32.13	.65	0.0	10	7.87	32.13	25.06	.029
20	5.82	32.09	.75	0.0	20	5.82	32.09	25.30	.057
30	4.85	32.11	.75	0.0	30	4.85	32.11	25.43	.083
50	4.06	32.28	.65	0.5	50	4.06	32.28	25.64	.132
70	4.64	32.57	.65	0.5	75	4.02	32.58	25.79	.190
90	3.67	32.60	.54	0.9	100	3.42	32.71	26.04	.242
110	3.29	32.79	.47	1.4					

Station 8: 55°00'N., 168°00'W., 22 June 1957. Messenger time: 0354,  
 0552 GMT. Weather 02. Clouds: type 6, amt. 9. Wind 270<sup>at</sup>, 5 kts.  
 Sea 3. Swell 1. Bar. 1015 mbs. Temp: dry 46.5°F, wet 46.0°F. BT 45.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (μg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	7.9	32.92			0	7.9	32.92	25.68	.000
10	7.18	32.95	.75	0.3	10	7.18	32.95	25.80	.023
20	5.80	33.06			20	5.80	33.06	26.07	.043
30	5.32	33.07	.62	1.3	30	5.32	33.07	26.13	.063
50	4.72	33.08			50	4.72	33.08	26.21	.100
80	4.22	33.14	.48	1.6	75	4.26	33.13	26.30	.144
110	4.00	33.20			100	4.06	33.18	26.36	.187
140	3.68	33.22	.52	2.0	150	3.68	33.24	26.44	.269
163	3.64	33.26	.49	2.1	200	3.67	33.39	26.56	.347
193	3.64	33.37			250	3.69	33.58	26.71	.418
243	3.72	33.57	.32	2.3	300	3.71	33.72	26.82	.484
(265)	3.66	33.63	.25	2.3	400	3.71	34.01	27.05	.600
293	3.71	33.70			500	3.66	34.15	27.17	.700
768	3.12	34.25			600	3.47	34.21	27.23	.792
1056	2.62	34.42	.06	2.5	700	3.28	34.26	27.29	.878
					800	3.10	34.30	27.34	.960
					1000	2.72	34.39	27.45	1.110

# Oceanographic Station Data, M/V Attu

Station 9: 56°00'N., 166°00'W., 23 June 1957. Messenger time: 0720  
 GCT. Weather 02. Clouds: type 6, amt. 1. Wind 340°T, 2 kts. Sea 2.  
 Swell 1. Bar. 1013 mbs. Temp: dry 49.0°F, wet 48.0°F. BT 49.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	9.1	32.01	-	-	0	9.1	32.01	24.79	.000
10	7.30	32.00	.68	0.0	10	7.30	32.00	25.04	.030
20	5.37	31.99	.72	0.0	20	5.37	31.99	25.28	.059
30	4.60	32.03	.59	0.1	30	4.60	32.03	25.39	.085
40	4.64	32.14	.57	0.4	50	4.41	32.20	25.54	.136
50	4.41	32.20	.62	0.9	75	1.80	32.30	25.85	.193
70	1.79	32.29	.57	1.4	100	(2.05)(32.33)		25.86	.247
90	1.98	32.32	.57	1.4					

Station 10: 55°00'N., 166°00'W., 24 June 1957. Messenger time: 0414  
 GCT. Weather 02. Clouds: type 6, amt. 4. Wind: 050°T, 2 kts. Sea 1.  
 Swell 1. Bar. 1010 mbs. Temp: dry 50.5°F, wet 48.0°F. BT 53.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	9.5	32.52	-	-	0	9.5	32.52	25.12	.000
10	7.88	32.49	.85	0.3	10	7.88	32.49	25.34	.027
20	5.86	32.58	.70	0.7	20	5.86	32.58	25.68	.052
30	5.15	32.62	.65	1.0	30	5.15	32.62	25.80	.075
50	4.64	32.74	.59	1.1	50	4.64	32.74	25.95	.118
70	4.08	32.87	.56	1.6	75	3.98	32.89	26.13	.167
90	3.87	32.94	.53	1.7	100	3.79	32.96	26.21	.214
120	3.62	33.00	.50	1.8					



# Oceanographic Station Data, M/V Attu

Station 11: 56°00'N., 165°00'W., 8 July 1957. Messenger time: 0347  
 CCT. Weather 02. Clouds: type 6, amt. 9. Wind: 050°T, 4 kts. Sea 1.  
 Swell 0. Bar. 1021 mbs. Temp: dry 51.0°F, wet 50.0°F. BT 58.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	10.4	31.91	-	-	0	10.4	31.91	24.50	.000
10	9.86	31.92	.63	0.1	10	9.86	31.92	24.60	.034
20	5.56	31.94	.71	0.1	20	5.56	31.94	25.21	.065
30	4.86	32.10	.63	0.2	30	4.86	32.10	25.42	.091
40	4.15	32.15	.57	1.1	50	2.12	32.24	25.78	.139
55	2.10	32.28	.54	1.4	75	2.10	32.30	25.83	.194
70	2.09	32.30	.54	1.4					
85	2.10	32.29	.54	1.4					

Station 12: 54°00'N., 160°00'W., 15 July 1957. Messenger time: 0516,  
 0707 CCT. Weather 03. Clouds: type 6, amt. 8. Wind: 180°T, 4 kts.  
 Sea 1. Swell 1. Bar. 1016 mbs. Temp: dry 53.2°F, wet 52.5°F. BT 63.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	11.9	32.57			0	11.9	32.57	24.74	.000
10	11.31	32.56	.58	0.4	10	11.31	32.56	24.85	.032
20	11.14	32.58			20	11.14	32.58	24.89	.063
30	7.94	32.73	.60	1.0	30	7.94	32.73	25.52	.090
50	4.88	32.77			50	4.88	32.77	25.95	.136
75	4.16	32.99	.53	1.6	75	4.16	32.99	26.20	.185
100	4.51	33.35			100	4.51	33.35	26.44	.228
125	4.66	33.67	.26	2.4	150	4.75	33.84	26.81	.299
142	4.78	33.81	.19	2.7	200	4.40	33.88	26.88	.361
167	4.62	33.87			250	4.26	33.97	26.96	.419
192	4.45	33.88	.13	2.9	300	4.13	34.02	27.02	.474
288	4.15	34.01			400	3.89	34.10	27.10	.578
482	3.72	34.16	.04	3.1	500	3.68	34.17	27.18	.675
772	3.22	34.31			600	3.51	34.22	27.24	.766
1061	2.77	34.41	.04	3.1	700	3.34	34.27	27.29	.853
					800	3.18	34.32	27.35	.934
					1000	2.85	34.39	27.43	1.086

# Oceanographic Station Data, M/V Attu

Station 13: 52°00'N., 160°00'W., 17 July 1957. Messenger time: 0536, 0719 GCT. Weather 03. Clouds: type 6, amt. 9. Wind: 140°T, 15 kts. Sea 4. Swell 4. Bar. 1019 mbs. Temp: dry 51.0°F, wet 51.0°F. BT 71.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	10.2	32.82			0	10.2	32.82	25.24	.000
10	9.86	32.77	.57	1.0	10	9.86	32.77	25.26	.027
20	9.83	32.77			20	9.83	32.77	25.26	.055
30	9.25	32.78	.58	1.0	30	9.25	32.78	25.36	.081
50	5.70	32.81			50	5.70	32.81	25.88	.129
75	4.18	32.92	.58	1.2	75	4.18	32.92	26.14	.179
100	4.03	33.47			100	4.03	33.47	26.59	.221
125	4.18	33.83	.13	2.4	150	4.21	33.88	26.90	.287
148	4.21	33.88	.10	2.4	200	4.07	33.96	26.98	.344
172	4.13	33.93			250	3.97	34.01	27.03	.399
196	4.08	33.96	.06	2.8	300	3.81	34.05	27.07	.451
295	3.84	34.05			400	3.65	34.14	27.16	.549
490	3.58	34.22	.04	2.8	500	3.47	34.22	27.24	.641
785	3.04	34.35			600	3.31	34.26	27.29	.726
1080	2.58	34.43	.05	2.8	700	3.17	34.31	27.34	.808
					800	3.00	34.35	27.39	.885
					1000	2.68	34.41	27.47	1.028

Station 14: 50°00'N., 160°00'W., 19 July 1957. Messenger time: 0350, 0543 GCT. Weather 02. Clouds: type 8, amt. 8. Wind: 230°T, 6 kts. Sea 2. Swell 1. Bar. 1026 mbs. Temp: dry 52.0°F, wet 51.0°F. BT 77.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	10.3	32.75			0	10.3	32.75	25.17	.000
10	10.05	32.72	.53	1.0	10	10.05	32.72	25.19	.028
20	9.70	32.71			20	9.70	32.71	25.24	.056
30	9.25	32.72	.47	1.0	30	9.25	32.72	25.32	.083
50	5.90	32.77			50	5.90	32.77	25.83	.131
75	4.58	32.83	.61	1.2	75	4.58	32.83	26.02	.184
100	4.30	32.87			100	4.30	32.87	26.09	.233
125	4.08	33.36	.37	2.0	150	4.20	33.85	26.37	.311
137	4.22	33.78	.15	2.4	200	4.10	33.94	26.96	.370
161	4.18	33.88			250	4.01	34.01	27.02	.424
185	4.12	33.92	.08	2.8	300	3.92	34.06	27.07	.477
280	3.96	34.04			400	3.74	34.15	27.16	.576
474	3.61	34.20	.04	2.8	500	3.55	34.22	27.23	.667
765	3.02	34.34			600	3.37	34.27	27.29	.753
1057	2.63	34.43	.06	2.8	700	3.17	34.32	27.35	.834
					800	3.00	34.35	27.39	.911
					1000	2.71	34.41	27.46	1.055



# Oceanographic Station Data, M/V Attu

Station 15: 50°00'N., 165°00'W., 21 July 1957. Messenger time: 0340, 0536 GCT. Weather 03. Clouds: type 8, amt. 8. Wind: 270°T, 6 kts. Sea 2. Swell 1. Bar. 1026 mbs. Temp: dry 52.0°F, wet 50.0°F. BT 89.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (‰)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (‰)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	10.0	32.76			0	10.0	32.76	25.23	.000
10	9.72	32.74	.56	0.7	10	9.72	32.74	25.26	.027
20	9.36	32.74			20	9.36	32.74	25.31	.054
30	9.30	32.74	.55	0.7	30	9.30	32.74	25.32	.081
50	6.28	32.85			50	6.28	32.85	25.34	.129
75	5.15	32.86	.59	1.2	75	5.15	32.86	25.99	.182
100	4.24	32.98			100	4.24	32.98	26.18	.231
125	3.98	33.48	.40	1.8	150	3.88	33.68	26.77	.309
147	3.88	33.65	.30	2.0	200	3.70	33.85	26.93	.371
171	3.96	33.78			250	3.68	33.93	26.99	.427
196	3.70	33.84	.15	2.1	300	3.63	34.00	27.05	.480
295	3.64	33.99			400	3.56	34.11	27.15	.580
492	3.49	34.19	.06	2.6	500	3.48	34.20	27.22	.673
788	3.00	34.34			600	3.32	34.26	27.29	.759
1083	2.58	34.43	.06	2.8	700	3.14	34.31	27.34	.840
					800	2.98	34.35	27.39	.917
					1000	2.70	34.40	27.46	1.062

Station 16: 53°00'N., 165°00'W., 24 July 1957. Messenger time: 0422, 0555 GCT. Weather 03. Clouds: type 3, amt. 2. Wind: 290°T, 6 kts. Sea 3. Swell 1. Bar. 1018 mbs. Temp: dry 53.0°F, wet 50.0°F. BT 106.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (‰)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (‰)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	11.0	32.88			0	11.0	32.88	25.15	.000
10	10.76	32.86	.56	1.0	10	10.76	32.86	25.17	.028
20	10.66	32.87			20	10.66	32.87	25.20	.056
30	7.46	32.89	.60	1.3	30	7.46	32.89	25.72	.081
50	4.21	32.98			50	4.21	32.98	26.18	.123
75	3.48	33.09	.56	1.4	75	3.48	33.09	26.34	.167
100	4.00	33.41			100	4.00	33.41	26.55	.207
125	4.00	33.68	.21	2.3	150	4.14	33.86	26.89	.274
149	4.14	33.86	.10	2.5	200	4.04	33.99	27.00	.331
173	4.08	33.93			250	3.98	34.05	27.05	.384
197	4.05	33.98	.04	2.6	300	3.89	34.09	27.10	.435
296	3.90	34.09			400	3.72	34.16	27.17	.532
491	3.56	34.21	.03	2.5	500	3.54	34.22	27.23	.623
790	3.06	34.34			600	3.38	34.26	27.28	.710
1088	2.58	34.43	.05	2.5	700	3.20	34.31	27.34	.792
					800	3.03	34.34	27.38	.869
					1000	2.70	34.40	27.46	1.015

# Oceanographic Station Data, M/V Attu

Station 17: 53°40'N., 165°02'W., 25 July 1957. Messenger time: 0621 GCT. Weather 02. Clouds: type 6, amt. 9. Wind: 00, 0 kts. Sea 0. Swell 0. Bar: 1012 mbs. Temp: dry 50.0°F., wet 49.0°F. Bt 109.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	10.1	32.25	-	-	0	10.1	32.25	24.81	.000
10	9.66	32.21	.59	0.4	10	9.66	32.21	24.85	.031
20	5.82	32.15	.56	0.8	20	5.82	32.15	25.35	.060
30	5.94	32.25	.53	0.8	30	5.94	32.25	25.41	.086
50	4.91	32.37	.52	1.0	50	4.91	32.37	25.62	.136
75	5.02	32.57	.51	1.0	75	5.02	32.57	25.77	.193
100	4.79	32.75	.47	1.7	100	4.79	32.75	25.94	.247
125	4.82	32.98	.43	2.0					

Station 18: 56°00'N., 165°00'W., 27 July 1957. Messenger time: 0351 GCT. Weather 02. Clouds: type 6, amt. 9. Wind: 270°T, 8 kts. Sea 3. Swell 2. Bar: 1017 mbs. Temp: dry 51.0°F., wet 50.0°F. BT 118.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	10.1	31.89	-	0.2	0	10.1	31.89	24.53	.000
10	9.89	31.89	.59	0.05	10	9.89	31.89	24.57	.034
20	7.64	31.93	.66	0.05	20	7.64	31.93	24.94	.066
30	4.50	32.08	.63	0.2	30	4.50	32.08	25.14	.094
40	2.25	32.29	.53	1.7	50	2.25	32.30	25.82	.141
55	2.25	32.30	.52	1.7	75	2.26	32.31	25.82	.196
70	2.26	32.31	.53	1.7					
85	2.26	32.31	.53	1.7					

# Oceanographic Station Data, M/V Attu

Station 19: 53°31'N., 165°00'W., 29 July 1957. Messenger time: 1625 GCT. Weather 02. Clouds: type 6, amt. 9. Wind: 020°T, 4 kts. Sea 1, Swell 1. Bar: 1025 mbs. Temp: dry 49.0°F, wet 49.0°F. BT 130.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (mg-at/L)	PO <sub>4</sub> -P (μg-at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	10.6	32.28	-	0.05	0	10.6	32.28	24.75	.000
10	10.59	32.28	.59	0.05	10	10.59	32.28	24.75	.032
20	10.55	32.27	.58	0.05	20	10.55	32.27	24.75	.064
30	9.81	32.39	.58	0.05	30	9.81	32.39	24.97	.095
50	5.75	32.69	.59	1.0	50	5.75	32.69	25.78	.147
75	4.72	32.80	.57	1.7	75	4.72	32.80	25.99	.201
100	4.68	33.06	.50	1.8	100	4.68	33.06	26.20	.249
125	5.02	33.41	.36	2.0					

Station 20: 53°00'N., 165°00'W., 30 July 1957. Messenger time: 0352, 0545 GCT. Weather 02. Clouds: type 8, amt. 9. Wind: 320°T, 10 kts. Sea 2. Swell 1. Bar: 1024 mbs. Temp: dry 51.0°F, wet 50.0°F. BT 132.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (mg-at/L)	PO <sub>4</sub> -P (μg-at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	11.5	32.70		0.5	0	11.5	32.70	24.92	.000
10	11.35	32.71	.57	0.5	10	11.35	32.71	24.95	.030
20	11.01	32.79			20	11.01	32.79	25.08	.060
30	10.76	32.80	.54	0.8	30	10.76	32.80	25.13	.089
50	4.86	32.92			50	4.86	32.92	26.07	.137
75	3.62	33.05	.58	1.4	75	3.62	33.05	26.30	.183
100	3.65	33.28			100	3.65	33.28	26.48	.224
125	4.08	33.68	.22	2.4	150	4.15	33.86	26.89	.293
146	4.17	33.83	.11	2.4	200	4.08	33.95	26.96	.351
170	4.14	33.95			250	4.00	34.02	27.03	.405
194	4.06	33.95	.04	2.7	300	3.94	34.07	27.08	.457
292	3.95	34.06			400	3.75	34.13	27.14	.557
485	3.59	34.19	.03	2.8	500	3.56	34.20	27.22	.650
780	3.07	34.33			600	3.38	34.25	27.27	.737
1074	2.60	34.43	.05	2.8	700	3.19	34.29	27.32	.820
					800	3.02	34.34	27.38	.899
					1000	2.71	34.41	27.46	1.044



# Oceanographic Station Data, M/V Attu

Station 21: 53°32'N., 164°30'W., 7 August 1957. Messenger time: 1223 GCT. Weather 02. Clouds: type 8, amt. 8. Wind: 270°T, 6 kts. Sea 2. Swell 1. Bar. 1026 mbs. Temp: dry 50.0°F, wet 50.0°F. BT 135.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (μg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn cm)
0	9.9	32.09	-	0.1	0	9.9	32.09	24.72	.000
10	9.34	32.06	.63	0.1	10	9.34	32.06	24.79	.032
20	9.10	32.00	.61	0.1	20	9.10	32.09	24.35	.063
30	7.20	32.61	.61	0.5	30	7.20	32.61	25.53	.091
50	5.47	32.66	.58	0.6	50	5.47	32.66	25.79	.138
75	4.81	32.76	.57	1.2	75	4.81	32.76	25.94	.192
100	4.65	33.01	.51	1.5	100	4.65	33.01	26.16	.241
125	5.03	33.33	.40	1.7					

Station 22: 50°00'N., 155°00'W., 9 August 1957. Messenger time: 0350, 0540 GCT. Weather 02. Clouds: type 8, amt. 9. Wind: 230°T, 14 kts. Sea 2. Swell 1. Bar. 1027 mbs. Temp: dry 51.0°F, wet 51.0°F. BT 145

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (μg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn cm)
0	11.4	32.66		0.8	0	11.4	32.66	24.91	.000
10	11.33	32.66	.57	0.8	10	11.33	32.66	24.92	.031
20	10.81	32.67			20	10.81	32.67	25.02	.061
30	10.60	32.66	.58	1.0	30	10.60	32.66	25.05	.090
50	5.86	32.75			50	5.86	32.75	25.82	.141
75	5.06	32.78	.60	1.4	75	5.06	32.78	25.93	.195
100	4.15	32.99			100	4.15	32.99	26.20	.244
124	4.03	33.44	.37	2.0	150	4.00	33.69	26.77	.322
136	4.06	33.57	.29	2.0	200	3.79	33.85	26.92	.384
159	3.98	33.75			250	3.65	33.94	27.00	.440
182	3.86	33.82	.16	2.6	300	3.61	34.00	27.05	.493
272	3.62	33.97			400	3.59	34.09	27.13	.594
454	3.55	34.14	.06	2.8	500	3.48	34.18	27.21	.688
733	3.12	34.31			600	3.31	34.25	27.28	.776
1012	2.67	34.42	.06	2.8	700	3.16	34.30	27.33	.858
					800	3.00	34.34	27.38	.936
					1000	2.69	34.41	27.46	1.081

Oceanographic Station Data, M/V Attu

Station 23: 53°00'N., 165°00'W., 11 August 1957. Messenger time: 0651, 0900 GCT. Weather 02. Clouds: type 8, amt. 9. Wind: 200°T, 20 kts. Sea 4. Swell 3. Bar. 1025 mbs. Temp: dry 53.0°F, wet 53.0°F. BT 155.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	ΔD (dyn m)
0	11.9	32.48		0.2	0	11.9	32.48	24.67	.000
10	11.82	32.48	.56	0.1	10	11.82	32.48	24.69	.033
20	11.83	32.49			20	11.83	32.49	24.59	.065
30	8.82	32.82	.58	1.0	30	8.82	32.82	25.46	.094
50	4.44	32.95			50	4.44	32.95	26.14	.139
75	3.80	33.03	.59	1.6	75	3.80	33.03	26.26	.184
100	3.69	33.22			100	3.69	33.22	26.42	.227
125	3.77	33.53	.35	2.4	150	4.00	33.87	26.91	.296
146	3.98	33.84	.13	2.6	200	4.00	33.98	27.00	.352
171	4.10	33.95			250	3.95	34.04	27.05	.406
195	4.00	33.97	.05	2.7	300	3.90	34.09	27.10	.457
294	3.91	34.09			400	3.76	34.17	27.17	.554
492	3.62	34.23	.03	2.8	500	3.60	34.23	27.24	.644
790	3.00	34.35			600	3.40	34.27	27.29	.731
1087	2.54	34.47	.05	2.9	700	3.18	34.31	27.34	.812
					800	2.98	34.35	27.39	.889
					1000	2.68	34.43	27.48	1.031

Station 24: 54°30'N., 166°00'W., 14 August 1957. Messenger time: 0456, 0622 GCT. Weather 03. Clouds: type 2, amt. 3. Wind: 160°T, 8 kts. Sea 2. Swell 1. Bar. 1019 mbs. Temp: dry 55.0°F, wet 54.0°F. BT 158

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	ΔD (dyn m)
0	10.0	32.70		0.1	0	10.0	32.70	25.18	.000
10	8.85	32.73	.64	0.2	10	8.85	32.73	25.39	.027
20	7.93	32.75			20	7.93	32.75	25.54	.052
30	6.44	32.89	.56	1.3	30	6.44	32.89	25.86	.075
50	5.37	33.02			50	5.37	33.02	26.09	.116
75	5.19	33.08	.45	1.7	75	5.19	33.08	26.16	.164
100	4.95	33.13			100	4.95	33.13	26.22	.210
125	4.66	33.18	.44	1.8	150	4.41	33.24	26.37	.297
147	4.44	33.24	.43	1.8	200	4.07	33.34	26.48	.379
171	4.25	33.27			250	3.85	33.41	26.56	.456
195	4.10	33.33	.44	2.0	300	3.80	33.53	26.66	.528
244	3.85	33.40			400	3.68	33.79	26.88	.659
292	3.80	33.51	.35	2.3					
365	3.76	33.70							
438	3.60	33.90	.16	2.8					

Oceanographic Station Data, M/V Attu

Station 25: 55°00'N., 165°00'W., 15 August 1957. Messenger time: 0354 GCT. Weather 02. Clouds: type 1, amt. 4. Wind: 160°T, 16 kts. Sea 2. Swell 3. Bar. 1023 mbs. Temp: dry 56.0°F, wet 55.0°F. BT 161.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/∞)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/∞)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	9.5	32.48	-	0.4	0	9.5	32.48	25.09	.000
10	8.82	32.48	.64	0.4	10	8.82	32.48	25.20	.028
20	8.74	32.49	.64	0.4	20	8.74	32.49	25.22	.056
30	8.18	32.56	.62	0.4	30	8.18	32.54	25.34	.083
40	7.67	32.54	.60	0.6	50	7.05	32.54	25.50	.135
55	6.85	32.54	.55	1.0	75	6.35	32.71	25.72	.194
70	6.55	32.65	.53	1.1					
85	5.84	32.84	.50	1.7					

Station 26: 53°44'N., 164°50'W., 16 August 1957. Messenger time: 1205 GCT. Weather 62. Clouds: type --, amt. --. Wind: 00, 0 kts. Sea 0. Swell 0. Bar. 1022 mbs. Temp: dry 52.0°F, wet -- BT 167.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/∞)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/∞)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	10.2	31.51	-		0	10.2	31.51	24.22	.000
10	9.17	31.93	.50		10	9.17	31.93	24.71	.035
25	6.08	-	.46		20	7.30	32.08	25.10	.065
50	5.25	32.29	.36		30	5.75	32.16	25.36	.093
80	5.05	32.44	.37		50	5.25	32.29	25.52	.144
110	4.95	32.70	.36		75	5.08	32.42	25.65	.204
140	5.00	33.18	.31		100	4.98	32.60	25.80	.261
170	5.05	33.34	.29		150	5.02	33.25	26.31	.360



# Oceanographic Station Data, M/V Attu

Station 27: 53°31'N., 164°50'W., 16 August 1957. Messenger time: 1434 GCT. Weather 51. Clouds: type --, amt. --. Wind: 320°T, 4 kts. Sea 2. Swell 1. Bar. 1021 mbs. Temp: dry 54.0°F, wet 54.0°F. BT 168.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	11.6	31.47	-		0	11.6	31.47	23.95	.000
10	10.79	31.89	.53		10	10.79	31.89	24.42	.037
25	9.95	32.50	.54		20	10.25	32.25	24.79	.071
50	6.08	32.64	.49		30	9.15	32.54	25.19	.101
80	4.82	32.76	.56		50	6.08	32.64	25.70	.152
110	4.81	33.09	.47		75	4.85	32.75	25.93	.207
140	5.25	33.47	.32		100	4.81	32.96	26.10	.257
170	5.12	33.63	.24		150	5.20	33.53	26.51	.343

Station 28: 52°43'N., 165°00'W., 18 August 1957. Messenger time: 0522, 0638 GCT. Weather 02. Clouds: type 8, amt. 9. Wind: 340°T, 25 kts. Sea 4. Swell 4. Bar. 1022 mbs. Temp: dry 53.5°F, wet 50.0°F. BT 169.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	12.5	32.56		0.8	0	12.5	32.56	24.62	.000
10	12.60	32.53	.52	0.6	10	12.60	32.53	24.58	.034
20	12.58	32.52			20	12.58	32.52	24.58	.067
30	10.03	32.78	.55	1.0	30	10.03	32.78	25.24	.098
50	5.38	32.95			50	5.38	32.95	26.03	.145
75	3.66	33.03	.59	1.8	75	3.66	33.03	26.28	.192
100	3.55	33.30			100	3.55	33.30	26.50	.243
124	3.87	33.59	.25	2.4	150	3.95	33.82	26.88	.312
147	3.94	33.80	.14	2.6	200	4.00	34.00	27.01	.369
171	4.02	33.92			250	3.93	34.06	27.07	.421
195	4.00	33.99	.05	2.6	300	3.86	34.10	27.11	.471
290	3.86	34.09			400	3.73	34.16	27.17	.568
482	3.62	34.21	.04	2.6	500	3.60	34.22	27.23	.659
778	3.12	34.34			600	3.42	34.26	27.28	.746
1067	2.65	34.43	.05	3.1	700	3.26	34.30	27.32	.829
					800	3.09	34.34	27.37	.908
					1000	2.75	34.41	27.46	1.054

Oceanographic Station Data, M/V Attn

Station 29: 51°30'N., 165°00'W., 19 August 1957. Messenger time: 1035 GCT. Weather 02. Clouds: type 1, amt. 1. Wind: 320°T, 2 kts. Sea 1. Swell 1. Bar. 1019 mbs. Temp: dry 52.0°F, wet 50.0°F. BT 175.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/‰)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/‰)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	11.7	32.61	-		0	11.7	32.61	24.81	.000
10	11.65	32.63	.63		10	11.65	32.63	24.84	.031
25	10.26	32.68	.57		20	10.90	32.66	24.99	.062
50	5.51	32.76	.57		30	9.10	32.70	25.33	.090
80	4.58	32.84	.58		50	5.51	32.76	25.87	.138
110	3.85	33.18	.42		75	4.67	32.83	26.02	.190
140	4.08	33.72	.26		100	4.00	33.00	26.22	.238
170	4.10	33.87	.13		150	4.08	33.81	26.85	.314

Station 30: 50°00'N., 165°00'W., 20 August 1957. Messenger time: 0310, 0513 GCT. Weather 02. Clouds: type 8, amt. 8. Wind: 340°T, 10 kts. Sea 3. Swell 1. Bar. 1017 mbs. Temp: dry 57.0°F, wet 53.0°F. BT 180.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/‰)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/‰)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	12.3	32.65		0.9	0	12.3	32.65	24.73	.000
10	12.08	32.63	.56	0.9	10	12.08	32.63	24.76	.032
20	11.96	32.62			20	11.96	32.62	24.77	.064
30	11.32	32.66	.56	1.0	30	11.32	32.66	24.92	.095
50	6.29	32.78			50	6.29	32.78	25.79	.148
75	4.72	32.83	.56	1.3	75	4.72	32.83	26.01	.201
100	4.10	33.13			100	4.10	33.13	26.31	.248
125	4.05	33.53	.32	2.4	150	4.04	33.70	26.77	.323
148	4.05	33.69	.25	2.5	200	3.98	33.91	26.94	.384
172	3.98	33.82			250	3.93	33.99	27.01	.439
196	3.98	33.90	.12	2.8	300	3.85	34.05	27.07	.492
292	3.86	34.04			400	3.66	34.14	27.16	.591
487	3.50	34.20	.04	2.4	500	3.48	34.21	27.23	.682
787	3.02	34.34			600	3.32	34.26	27.29	.768
1087	2.60	34.44	.05	3.2	700	3.18	34.31	27.34	.850
					800	3.01	34.35	27.39	.927
					1000	2.72	34.41	27.46	1.071

Oceanographic Station Data, M/V Attu

Station 31: 50°00'N., 162°30'W., 22 August 1957. Messenger time: 0910  
 GCT. Weather 03. Clouds: type 8, amt. 3. Wind: 050°T, 8 kts. Sea 2.  
 Swell 0. Bar. 1027 mbs. Temp: dry 54.5°F, wet 54.5°F. BT 185.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (‰)	O <sub>2</sub> (mg- at/L)	PCO <sub>2</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (‰)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	13.2	32.70	-		0	13.2	32.70	24.59	.000
10	13.19	32.65	.55		10	13.19	32.65	24.56	.034
25	11.46	32.66	.58		20	12.67	32.65	24.55	.067
50	6.03	32.81	.60		30	10.83	32.68	25.02	.098
80	4.72	32.86	.60		50	6.03	32.81	25.84	.150
110	4.25	33.13	.51		75	4.80	32.85	26.02	.202
140	4.06	33.58	.32		100	4.38	33.00	26.18	.250
170	3.96	33.74	.23		150	4.01	33.67	26.75	.329

Station 32: 51°30'N., 162°30'W., 22 August 1957. Messenger time: 2155  
 GCT. Weather 02. Clouds: type 5, amt. 8. Wind: 050°T, 4 kts. Sea 1.  
 Swell 0. Bar. 1028 mbs. Temp: dry 57.0°F, wet 56.0°F. BT 188.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (‰)	O <sub>2</sub> (mg- at/L)	PCO <sub>2</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (‰)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	12.9	32.69	-		0	12.9	32.69	24.65	.000
10	12.50	32.66	.56		10	12.50	32.66	24.70	.033
25	11.55	32.68	.57		20	12.06	32.67	24.79	.065
50	5.70	32.78	.62		30	11.11	32.70	24.99	.096
80	3.99	32.88	.59		50	5.70	32.78	25.86	.147
110	3.68	33.28	.43		75	4.10	32.87	26.11	.198
140	4.06	33.73	.20		100	3.60	33.00	26.26	.244
170	4.15	33.89	.10		150	4.10	33.79	26.84	.319



# Oceanographic Station Data, M/V Attu

Station 33: 53°00'N., 162°30' W., 23 August 1957. Messenger time: 0943  
 GCT. Weather 01. Clouds: type 8, amt. 2. Wind: 090°T, 6 kts. Sea 1.  
 Swell 1. Bar. 1027 mbs. Temp: dry 55.0°F, wet 55.0°F. BT 191.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH	T	S	O <sub>2</sub>	PC <sub>4</sub> -P	DEPTH	T	S	$\sigma_t$	$\Delta D$
(m)	(°C)	(‰)	(mg- at/L)	( $\mu$ g- at/L)	(m)	(°C)	(‰)	(g/L)	(dyn m)
0	12.8	32.78	-		0	12.8	32.78	24.73	.000
10	12.80	32.77	.55		10	12.80	32.77	24.73	.032
24	11.72	32.77	.55		20	11.94	32.77	24.89	.064
47	5.88	32.92	.60		30	10.89	32.78	25.09	.094
75	3.58	33.06	.58		50	5.00	32.93	26.06	.142
103	3.76	33.33	.43		75	3.58	33.06	26.31	.188
131	3.91	33.63	.25		100	3.72	33.31	26.49	.229
160	4.10	33.90	.09		150	4.03	33.82	26.87	.298

Station 34: 53°56'N., 162°20'W., 23 August 1957. Messenger time: 1759  
 GCT. Weather 01. Clouds: type 3, amt. 6. Wind: 140°T, 12 kts. Sea 2.  
 Swell 1. Bar. 1024 mbs. Temp: dry 54.0°F, wet 54.0°F. BT 193.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH	T	S	O <sub>2</sub>	PC <sub>4</sub> -P	DEPTH	T	S	$\sigma_t$	$\Delta D$
(m)	(°C)	(‰)	(mg- at/L)	( $\mu$ g- at/L)	(m)	(°C)	(‰)	(g/L)	(dyn m)
0	12.3	31.95	-		0	12.3	31.95	24.19	.000
10	11.90	31.93	.58		10	11.90	31.93	24.25	.037
25	7.06	32.39	.55		20	8.60	32.20	25.01	.070
50	5.27	32.45	.53		30	6.72	32.40	25.43	.098
79	5.15	32.72	.48		50	5.27	32.45	25.65	.147
109	5.10	32.84	.45		75	5.16	32.69	25.85	.204
138	5.07	32.93	.43		100	5.10	32.81	25.95	.256
168	5.06	33.10	.39		150	5.06	32.98	26.09	.357

# Oceanographic Station Data, M/V Attu

Station 35: 58°00'N., 140°10'W., 8 September 1957. Messenger time: 0247, 0555 GCT. Weather: 03. Clouds: type 2, amt. 4. Wind: 090°T, 6 kts. Sea 2. Swell 2. Bar. 1014 mbs. Temp: dry 58.0°F, 58.0°F. BT 198.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/∞)	O <sub>2</sub> (mg- at/L)	PO <sub>2</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/∞)	σ <sub>t</sub> (g/l.)	Δ D (dyn m)
0	13.6	32.25		0.6	0	13.6	32.25	24.17	.000
10	12.78	32.25	.54	0.4	10	12.78	32.25	24.33	.037
20	12.75	32.24			20	12.75	32.24	24.33	.073
30	12.73	32.28	.54	0.4	30	12.73	32.25	24.34	.109
50	11.5	32.26			50	11.52	32.26	24.57	.179
75	9.4	32.27	.53	0.4	75	9.46	32.27	24.93	.259
100	5.37	32.73			100	5.37	32.73	25.86	.324
124	5.06	32.94	.49	1.7	150	5.50	33.41	26.38	.420
140	5.36	33.28	.39	1.8	200	5.47	33.74	26.65	.497
164	5.62	33.55			250	5.15	33.84	26.76	.566
188	5.52	33.70	.28	2.0	300	4.89	33.92	26.85	.630
282	4.94	33.90			400	4.51	34.01	26.97	.749
472	4.26	34.07	.07	2.8	500	4.20	34.08	27.06	.859
763	3.54	34.23			600	3.95	34.14	27.13	.961
1055	3.05	34.38	.03	3.0	700	3.71	34.20	27.20	1.058
					800	3.48	34.25	27.26	1.148
					1000	3.13	34.35	27.38	1.314

Summary of Observations at Bathymograph Lowerings, M/V Attu 1957  
(for coded values see H.O. Pub 606-C)

900' BT, Ser. No. 7750

Ser. No.	Time GCT	Date 1957	Latitude N.	Longitude W.	Bkt. Temp. °C	Wind		Bar. mbs	Wear ther	Clouds		Vis		Swell Dir.	Swell Amt. °T	Surf. Sal. ‰
						Dir. °T	Force kts									
1	1800	5/27	51°37'	176°15'	5.1	32	8	15	02	7	9	6	3	24	1	32.95
2	2020	5/27	51°20'	176°08	5.6	32	8	16	02	7	9	8	3	24	1	32.64
3	2250	5/27	51°02	175°53	5.4	30	8	17	02	7	9	7	4	29	1	32.63
4	0120	5/28	50°41	175°40	5.4	30	8	17	02	7	9	7	4	29	1	32.64
5	0345	5/28	50°28	175°16	5.3	30	10	17	02	7	9	7	4	29	1	32.63
6	0810	5/28	50°00	175°00	5.8	30	1	18	02	7	9	5	1	29	1	32.84
7	0800	5/30	50°00	175°00	5.9	16	15	08	02	9	9	4	4	16	2	32.93
8	2340	5/31	49°40	174°55	6.0	18	5	15	02	0	1	8	3	18	2	32.87
9	0530	6/1	49°20	174°55	6.4	16	5	15	02	9	9	7	3	18	2	32.95
10	0800	6/1	48°59	174°57	6.4	16	3	15	02	9	9	5	3	18	2	32.95
11	1100	6/1	48°34	175°00	6.2	16	3	15	01	0	1	5	2	18	1	32.95
12	1330	6/1	48°10	175°05	6.5	16	3	15	03	2	5	5	2	18	1	33.03
13	1615	6/1	47°50	175°05	6.5	16	5	14	02	2	5	5	2	18	1	32.99
14	1900	6/1	47°29	175°03	6.6	16	10	12	03	9	9	6	3	17	2	33.03
15	2130	6/1	47°05	175°03	7.3	16	25	11	02	9	9	6	4	17	3	33.12
16	1800	6/7	52°11	176°10	5.0	05	4	14	02	6	9	2	2	00	1	33.19
17	2030	6/7	52°25	175°50	5.3	03	4	14	01	6	9	7	3	03	1	33.18
18	2300	6/7	52°40	175°30	5.4	03	4	13	03	6	9	6	3	03	1	33.19
19	0130	6/8	52°55	175°08	5.6	03	4	13	02	6	9	7	3	03	1	33.18
20	0345	6/8	53°00	175°00	5.8	05	5	13	01	6	6	6	2	05	1	33.19
21	0530	6/14	53°22	175°00	5.8	32	2	16	02	6	9	7	1	32	1	33.24
22	0800	6/14	53°42	175°00	5.7	32	2	16	02	6	9	7	1	32	1	33.19
23	1030	6/14	54°02	175°00	5.4	32	2	16	02	6	9	6	1	32	1	33.18
24	1300	6/14	54°21	175°00	5.5	32	2	16	02	6	9	7	1	32	1	33.17
25	1530	6/14	54°38	175°00	5.5	32	2	16	02	6	9	7	1	32	1	33.17
26	1800	6/14	55°00	175°00	5.0	32	3	17	02	6	9	7	1	32	1	33.15
27	2030	6/14	55°20	175°00	5.4	32	5	16	02	6	9	7	1	32	1	33.19
28	2300	6/14	55°41	175°00	5.8	32	5	16	02	6	9	7	1	32	1	33.09
29	0250	6/15	56°00	175°00	5.8	32	5	16	02	6	9	7	1	32	1	32.94
30	2400	6/15	56°03	174°30	6.4	20	4	17	02	6	9	7	1	32	1	32.97



Ser. No.	Time GCT	Date 1957	Latitude N.	Longitude W.	Hgt. Temp. °C	Wind		Air Temp.		Bar. mbs	Wes-ther	Type	Amt.	Swell Dir.	Amt.	Surf. Sal.		
						Dir. or	kts.	Dry Bulb °F	Wet Bulb °F									
31	0230	6/16	56°00'	173°52'	6.3	20	4	45.0	44.0	18	02	6	9	7	1	32	1	33.06
32	0635	6/16	56 00	173 00	6.9	20	1	45.0	44.0	19	02	6	9	8	1	32	1	32.72
33	0700	6/17	56 00	172 19	7.0	11	15	43.0	43.0	18	02	6	9	6	4	11	2	33.02
34	0930	6/17	56 00	171 42	6.8	11	15	44.0	43.5	18	02	6	9	6	4	11	2	33.04
35	1200	6/17	56 00	171 04	6.8	11	15	43.0	42.5	17	02	6	9	6	4	11	2	33.05
36	1415	6/17	56 00	170 31	6.7	11	15	43.0	43.0	17	02	6	9	6	3	11	1	32.60
37 <sup>x</sup>	0345	6/18	56 00	170 00	7.4	07	12	46.0	45.8	17	02	6	9	7	3	07	1	32.74
38 <sup>x</sup>	0350	6/19	56 52	170 00	7.0	09	5	48.0	47.0	20	01	3	4	8	2	05	1	32.13
39 <sup>x</sup>	2315	6/19	56 26	170 00	5.4	07	5	45.5	45.0	20	02	6	9	7	4	14	2	32.24
40	0130	6/21	56 00	167 53	7.5	02	4	46.0	45.5	18	02	6	9	6	2	02	1	32.67
41	0500	6/21	56 00	168 45	7.4	02	4	45.0	45.0	17	02	6	9	5	2	02	1	32.38
42 <sup>x</sup>	0835	6/21	56 00	168 00	7.9	02	4	43.5	-	16	02	6	9	2	2	02	1	32.14
43 <sup>x</sup>	2230	6/21	55 39	168 00	7.7	27	5	45.0	45.0	15	02	6	9	6	3	27	2	32.30
44	0100	6/22	55 17	168 00	7.3	27	5	45.0	45.0	15	02	6	9	6	4	32	2	32.72
45	0325	6/22	55 00	168 00	7.9	27	5	46.5	46.0	15	02	6	9	3	3	32	1	32.92
46 <sup>x</sup>	2300	6/22	55 22	167 35	8.4	34	2	48.5	47.5	15	02	1	1	8	2	34	1	32.49
47 <sup>x</sup>	0130	6/23	55 35	166 58	9.2	34	2	49.0	48.0	14	02	1	1	8	2	34	1	32.30
48 <sup>x</sup>	0400	6/23	55 47	166 39	9.5	34	2	48.0	47.0	13	00	-	-	0	2	34	1	32.13
49 <sup>x</sup>	0700	6/23	56 00	166 00	9.1	34	2	49.0	48.0	13	02	6	1	6	2	34	1	32.01
50 <sup>x</sup>	1850	6/23	56 00	166 00	8.9	00	0	44.0	43.0	11	02	6	9	7	0	00	0	32.00
51 <sup>*</sup>	2230	6/23	55 41	166 02	9.6	00	0	48.0	45.0	09	01	6	7	7	0	00	0	32.08
52 <sup>*</sup>	0100	6/24	55 19	166 02	9.9	00	0	50.5	47.0	10	01	6	4	8	0	00	0	32.41
53 <sup>*</sup>	0350	6/24	55 00	166 00	9.5	05	2	50.5	48.0	10	02	6	4	8	1	00	1	32.52
54 <sup>*</sup>	2230	6/24	54 41	166 14	8.6	05	2	49.0	48.0	07	02	6	9	6	1	32	1	32.42
55 <sup>*</sup>	1400	7/7	55 00	165 00	8.3	05	8	47.0	47.0	21	02	6	9	7	1	00	0	31.88
56 <sup>*</sup>	1630	7/7	55 20	165 00	10.0	05	8	49.0	49.0	21	02	6	9	7	2	02	1	31.87
57 <sup>*</sup>	1900	7/7	55 42	165 00	9.8	05	6	49.0	49.0	21	02	6	9	7	2	02	1	31.88
58 <sup>*</sup>	0325	7/8	56 00	165 00	10.4	05	4	51.0	50.0	21	02	6	9	7	1	00	0	31.91
59 <sup>*</sup>	0415	7/9	56 00	165 00	10.2	05	4	50.0	49.0	23	02	6	9	7	1	36	1	31.95
60 <sup>*</sup>	0508	7/10	56 00	165 00	10.6	09	10	53.0	53.0	14	03	2	6	7	3	0	0	31.92

Summary of Observations at Bathymthermograph Lowerings, M/V Attu 1957  
(for coded values see H.O. Pub 606-C) (cont.)

900' BT, Ser. No. 7750

Ser. No.	Time GCT	Date 1957	Latitude N.	Longitude W.	Hgt. Temp. °C	Wind		Air Temp.		Bar. mbs	Clouds		Vln Sea	Swell		Surf. Sal.
						Dir. °T	Force kts.	Dry Bulb	Wet Bulb		Type	Am't.		Dir. °T	Am't.	
61	2312	7/14	54°34'	160°10'	10.9	27	3	55.5	54.0	17	00	0	3	00	0	31.94
62	0120	7/15	54 17	160 04	11.3	18	2	55.0	54.0	17	03	8	7	18	1	32.48
63	0444	7/15	54 00	160 00	11.9	18	4	53.0	52.5	16	03	6	7	18	1	32.57
64	1905	7/15	54 00	160 00	11.6	09	5	52.0	51.0	17	02	6	7	09	1	32.60
65	2400	7/15	53 42	160 00	11.0	09	8	52.0	52.0	16	02	6	7	09	2	32.84
66	0230	7/16	53 24	160 00	10.8	09	15	52.0	52.0	15	02	6	7	09	3	32.83
67	0500	7/16	53 06	160 00	10.4	09	25	51.0	-	14	51	7	4	09	4	32.84
68	0730	7/16	52 48	160 00	10.0	04	15	50.0	50.0	14	02	9	5	09	3	32.75
69	1000	7/16	52 30	160 00	9.7	09	10	49.0	49.0	15	02	9	5	09	2	32.70
70	1230	7/16	52 12	160 00	9.6	14	3	49.0	49.0	15	01	6	5	00	1	32.74
71	0505	7/17	52 00	160 00	10.2	14	15	51.0	51.0	19	03	6	6	09	4	32.82
72	1824	7/17	52 00	160 00	10.0	18	25	50.0	50.0	21	03	6	4	18	4	32.80
73	0200	7/18	51 38	159 57	9.9	18	25	51.0	51.0	24	02	6	4	18	4	32.76
74	0500	7/18	51 15	159 57	9.9	18	15	51.0	51.0	25	02	6	3	18	2	32.74
75	0800	7/18	50 53	159 57	9.9	18	10	50.0	50.0	26	02	6	2	18	1	32.71
76	1100	7/18	50 30	159 57	10.0	18	6	50.0	50.0	26	01	8	2	18	1	32.72
77	0316	7/19	50 00	160 00	10.3	23	06	52.0	51.0	26	02	8	7	23	1	32.75
78	1902	7/19	50 00	160 00	10.1	23	10	50.0	50.0	26	02	8	7	23	2	32.73
79	2400	7/19	50 07	160 10	10.2	20	10	51.0	51.0	27	02	8	7	23	2	32.70
80	0230	7/20	50 07	160 32	9.9	20	12	50.0	50.0	27	02	8	7	23	2	32.68
81	0500	7/20	50 07	161 00	9.9	23	8	50.0	50.0	26	02	8	7	23	2	32.75
82	0730	7/20	50 07	161 31	9.9	23	8	50.0	50.0	26	02	8	6	23	1	32.75
83	1000	7/20	50 07	162 00	9.8	23	6	50.0	50.0	26	02	8	5	23	1	32.75
84	1230	7/20	50 07	162 25	9.8	23	6	49.5	49.5	26	02	8	5	23	1	32.75
85	1500	7/20	50 00	163 10	9.8	23	4	49.5	49.5	26	02	8	2	23	1	32.71
86	1730	7/20	50 00	163 45	9.8	23	4	49.5	49.5	26	01	8	7	23	1	32.73
87	2000	7/20	50 00	164 30	9.8	27	4	50.0	50.0	26	02	8	7	23	1	32.71
88	2130	7/20	50 00	164 45	9.8	27	4	51.0	51.0	26	01	8	7	23	1	32.75
89	0316	7/21	50 00	165 00	10.0	27	6	52.0	50.0	26	03	8	7	27	1	32.76
90	2200	7/21	50 00	165 00	9.7	27	15	49.0	49.0	31	02	8	7	32	4	32.76



Summary of Observations at Eathymograph Lowerings, M/V Atlu 1957  
(for coded values see H.O. Pub 606-C) (cont.)

900' BT, Ser. No. 7750

Ser. No.	Time OCT	Date 1957	Latitude N.	Longitude W.	Ekt. Temp. °C	Wind		Air Temp.		Bar. mbs	Wear there	Clouds		Vis	Sea		Swell Dir.	Amt. of	Type	Amt.	Surf. Sal. ‰
						Dir. of	Force	Dry	Wet			Dir. of	Amt. of								
91	2300	7/21	50°00'	165°00'	9.7	27	15	50.0	49.0	31	02	8	9	7	4	4	32	4			32.73
92	2400	7/21	50 00	165 00	9.7	27	15	50.0	49.0	31	02	8	9	7	4	4	32	4			32.74
93	0100	7/22	50 00	165 00	9.6	27	20	50.0	49.0	31	02	8	9	7	4	4	32	4			32.74
94	0200	7/22	50 00	165 00	9.7	27	20	50.0	49.0	31	02	8	9	7	4	4	32	4			32.74
95	0300	7/22	50 00	165 00	9.7	27	20	50.0	49.0	31	02	8	9	7	4	4	32	4			32.75
96	0400	7/22	50 00	165 00	9.6	27	20	49.0	48.0	31	02	6	9	7	4	4	32	5			32.74
97	0500	7/22	50 00	165 00	9.6	27	20	49.0	48.0	30	02	6	9	7	4	4	32	5			32.73
98	0600	7/23	50 21	165 00	9.5	27	25	49.0	48.0	21	50	0	9	4	3	3	32	5			32.73
99	0700	7/23	50 42	165 00	9.4	27	25	48.0	48.0	19	02	8	9	6	4	4	32	4			32.67
100	0800	7/23	51 07	165 00	9.3	32	6	48.0	47.0	20	01	0	1	6	2	2	32	1			32.67
101	1130	7/23	51 27	165 02	9.2	32	10	48.0	47.0	19	02	0	1	6	2	2	32	1			32.72
102	1400	7/23	51 47	165 02	9.3	32	30	48.0	47.0	17	03	8	7	5	4	4	32	4			32.68
103	1630	7/23	52 05	165 02	9.3	32	30	49.0	47.0	17	01	8	2	7	4	4	32	4			32.67
104	1900	7/23	52 22	165 02	9.1	32	20	50.0	48.0	17	01	1	1	7	4	4	32	4			32.68
105	2200	7/23	52 40	165 02	10.6	32	25	51.0	49.0	18	02	1	1	7	4	4	32	4			32.68
106	0350	7/24	53 00	165 00	11.0	29	6	53.0	50.0	18	03	3	2	7	3	3	29	1			32.88
107	0130	7/25	53 17	164 58	11.3	23	5	52.0	51.0	12	03	3	4	7	2	2	23	1			32.88
108	0400	7/25	53 38	164 58	9.6	23	5	49.0	48.0	12	02	6	9	5	2	2	23	1			32.66
109	0550	7/25	53 40	165 02	10.1	00	0	50.0	49.0	12	02	6	9	7	0	0	00	0			32.10
110	2100	7/25	53 37	165 04	9.9	02	10	50.0	50.0	11	02	7	9	6	2	2	02	1			32.25
111	2250	7/25	53 55	165 00	8.6	02	6	50.5	49.5	13	01	8	8	6	2	2	02	1			31.99
112	0210	7/26	54 13	164 40	7.4	02	6	49.5	48.0	14	02	3	8	6	2	2	02	1			32.27
113	0330	7/26	54 22	164 58	8.4	02	2	49.5	48.5	15	02	3	8	6	2	2	02	1			31.73
114	0450	7/26	54 33	165 06	8.0	02	2	49.0	48.0	15	01	3	4	7	2	2	02	1			31.94
115	1915	7/26	55 00	164 50	7.8	27	4	47.0	47.0	17	45	-	-	0	1	1	27	1			32.08
116	2145	7/26	55 20	164 55	9.1	27	8	49.0	49.0	17	02	6	9	7	2	2	27	1			31.92
117	0015	7/27	55 40	164 57	9.7	27	10	50.0	50.0	17	42	6	9	4	3	3	27	2			31.91
118	0325	7/27	56 00	165 00	10.1	27	8	51.0	50.0	17	02	6	9	6	3	3	27	2			31.89
119	1640	7/27	56 00	164 53	10.0	32	6	49.0	49.0	22	02	0	9	7	1	1	29	1			31.92
120	0450	7/28	56 00	165 00	10.2	32	6	50.0	49.0	25	02	8	9	7	2	2	32	1			31.91



(for coded values see H.O. Pub 606-C) (cont)

900' BT, Ser. No. 7750

Ser. No.	Time GCT	Date 1957	Latitude N.	Longitude W.	Bkt. Temp. °C	Wind		Air Temp.		Bar. mbs	Wear there	Clouds		Vis Sea	Swell		Surf. Sea	
						Dir. °T	Force kts.	Dry Bulb °F	Wet Bulb °F			Type	Amount		Dir. °T	Amount		
121	1847	7/28	56°00'	165°00'	10.2	32	4	50.0	49.0	26	02	6	9	7	1	32	1	31.94
122	2245	7/28	55°40'	165°00'	10.0	32	4	52.0	50.0	27	02	6	9	7	1	32	1	31.97
123	0115	7/29	55°20'	165°00'	9.5	32	4	52.0	50.0	27	02	6	9	7	1	32	1	32.01
124	0345	7/29	55°00'	165°00'	8.3	32	6	49.0	48.0	27	02	6	9	7	1	32	1	31.95
125	0615	7/29	54°40'	165°00'	7.8	05	8	48.0	47.0	26	02	6	9	7	2	05	1	31.94
126	0715	7/29	54°31'	165°08'	7.8	05	12	48.0	47.0	25	02	6	9	6	3	05	1	32.05
127	0845	7/29	54°22'	164°57'	9.5	05	3	49.0	48.0	25	01	6	8	6	0	00	0	31.64
128	1000	7/29	54°15'	164°40'	7.5	00	0	47.0	47.0	24	02	6	8	6	0	00	0	32.28
129	1330	7/29	53°49'	164°53'	9.3	00	0	48.0	48.0	25	02	6	9	6	0	00	0	31.95
130	1600	7/29	53°31'	165°00'	10.6	02	4	49.0	49.0	25	02	6	9	7	1	02	1	32.28
131	1835	7/29	53°13'	165°00'	11.4	32	4	50.0	49.0	25	02	8	9	7	1	32	1	32.66
132	0324	7/30	53°00'	165°00'	11.5	32	10	51.0	50.0	24	02	8	9	7	2	32	1	32.70
133	0300	7/31	53°00'	165°00'	11.7	32	6	51.5	48.0	24	01	8	8	7	2	32	1	32.71
134	1900	7/31	53°00'	165°00'	11.6	34	4	50.0	49.0	24	50	8	7	6	2	34	1	32.77
135	1156	8/7	53°32'	164°30'	9.9	27	6	50.0	50.0	26	02	8	8	5	2	27	1	32.05
136	1700	8/7	53°00'	165°00'	11.7	00	0	51.0	50.0	27	02	8	8	7	0	00	0	32.68
137	1930	8/7	52°40'	165°00'	11.3	00	0	52.0	51.0	27	02	8	8	7	0	00	0	32.70
138	2200	8/7	52°20'	165°00'	11.6	00	0	54.0	52.0	29	02	8	8	7	0	00	0	32.81
139	0030	8/8	52°00'	165°00'	11.2	16	2	53.0	52.0	29	02	8	8	7	1	16	1	32.66
140	0300	8/8	51°40'	165°00'	11.0	16	4	52.0	51.0	28	02	8	9	7	2	16	1	32.66
141	0530	8/8	51°20'	165°00'	10.8	11	20	51.0	-	26	51	-	-	2	4	11	2	32.69
142	0800	8/8	51°00'	165°00'	10.9	14	15	52.0	-	26	43	-	-	3	3	14	2	32.63
143	1030	8/8	50°40'	165°00'	11.0	14	8	52.0	-	26	43	-	-	3	2	14	1	32.61
144	1300	8/8	50°20'	165°00'	11.2	14	8	53.0	-	26	43	-	-	3	2	14	1	32.63
145	0519	8/9	50°00'	165°00'	11.4	23	14	51.0	51.0	27	02	8	9	6	2	23	1	32.66
146	1855	8/9	50°00'	165°00'	11.2	32	6	51.0	50.0	30	02	8	9	7	2	32	1	32.67
147	2400	8/9	50°19'	165°00'	11.0	32	6	52.0	50.5	30	02	8	9	7	2	32	1	32.66
148	0230	8/10	50°39'	165°00'	11.0	32	6	52.0	50.5	30	01	8	8	7	2	32	1	32.67
149	0500	8/10	50°59'	165°00'	10.9	32	12	52.0	51.0	30	01	8	7	7	3	32	2	32.66
150	0730	8/10	51°19'	165°00'	10.9	32	8	51.0	51.0	30	01	8	6	6	2	32	1	32.85

Ser. No.	Time GCT	Date 1957	Latitude N.	Longitude W.	Hkt. Temp. °C	Wind		Air Temp.		Bar. mbs	Wet mbs	Wet Bulb °F	Type	Clouds		Vis. Sea	Surf.		
						Dir. °T	Force kts.	Dry Bulb °F	Wet Bulb °F					Dir. °T	Amt.		Dir. °T	Amt.	
151	1000	8/10	51°39'	165°00'	10.8	32	6	51.0	51.0	30	51	8	3	9	4	2	32	1	32.69
152	1230	8/10	51°59	165°00	10.8	32	10	50.0	50.0	30	01	8	32	4	6	2	32	1	32.69
153	1500	8/10	52°19	165°00	10.9	32	14	50.0	50.0	29	03	8	32	8	7	2	32	1	32.76
154	1730	8/10	52°39	165°00	11.4	27	16	51.0	50.0	29	02	8	27	9	7	3	27	2	32.84
155	0728	8/11	53°00	165°00	11.9	20	20	52.0	53.0	25	02	8	20	9	7	4	20	3	32.48
156	1520	8/12	54°00	166°01	7.4	16	8	48.0	48.0	12	61	9	9	9	5	1	16	1	32.49
157	1544	8/12	54°02	166°06	7.4	16	8	48.0	48.0	12	61	9	9	9	5	1	16	1	32.42
158	0518	8/14	54°30	166°00	10.0	16	8	55.0	54.0	19	03	2	16	3	7	2	16	1	32.70
159	1908	8/14	54°37	166°04	9.9	14	14	56.0	54.0	23	02	1	14	4	7	3	11	3	32.75
160	2330	8/14	54°45	165°33	9.9	14	20	52.0	52.0	23	02	1	1	4	6	4	14	3	32.28
161	0337	8/15	55°00	165°00	9.5	16	16	56.0	55.0	23	02	1	1	4	7	3	18	3	32.48
162	1910	8/15	55°05	164°50	8.3	16	08	52.0	52.0	22	42	3	18	4	3	2	18	1	32.20
163	0210	8/16	54°32	165°06	8.0	00	0	50.0	50.0	22	61	-	00	-	4	0	00	0	32.40
164	0330	8/16	54°22	164°57	8.0	00	0	50.0	50.0	22	61	-	00	-	4	0	00	0	31.99
165	0625	8/16	54°15	164°40	10.9	00	0	50.0	50.0	22	45	-	00	-	3	0	00	0	31.48
166	0840	8/16	53°59	164°46	10.9	00	0	51.0	51.0	22	51	-	00	-	4	0	00	0	31.69
167	1132	8/16	53°44	164°50	10.2	00	0	52.0	-	22	62	-	00	-	5	0	00	0	31.51
168	1408	8/16	53°31	164°50	11.6	32	4	54.0	54.0	21	51	-	32	-	4	2	32	1	31.47
170	0647	8/17	53°00	165°00	12.8	14	6	55.0	55.0	17	62	9	14	9	4	3	14	4	32.19
169	0538	8/18	52°43	165°00	12.5	34	25	53.5	50.0	22	02	8	34	9	7	4	34	4	32.56
171	1856	8/18	52°40	165°04	12.7	32	4	54.0	50.5	22	02	3	32	3	7	2	32	1	32.54
172	0330	8/19	52°21	165°02	12.2	32	4	55.0	51.0	20	03	3	32	6	7	2	32	1	32.61
173	0600	8/19	52°01	165°00	11.9	32	4	52.0	50.0	19	01	8	32	3	7	2	32	1	32.63
174	0830	8/19	51°41	165°00	11.8	32	4	52.0	50.0	19	01	8	32	2	6	2	32	1	32.62
175	1005	8/19	51°30	165°00	11.7	32	2	52.0	50.0	19	02	1	32	1	6	1	32	1	32.61
176	1230	8/19	51°20	165°00	11.7	32	4	52.0	50.0	19	03	1	32	4	6	1	32	1	32.65
177	1500	8/19	51°00	165°00	11.7	32	8	52.0	50.0	19	03	8	32	7	6	2	32	1	32.65
178	1730	8/19	50°40	165°00	11.8	32	12	53.0	51.0	18	03	8	32	8	7	3	32	1	32.66
179	2000	8/19	50°20	165°00	11.9	32	12	53.0	50.0	18	02	8	32	8	7	3	32	1	32.66
180	0344	8/20	50°00	165°00	12.3	34	10	57.0	53.0	17	02	8	34	8	7	3	32	1	32.65



Summary of Observations at Bathymograph Lowerings, M/V Attn 1957  
(for coded values see H.O. Pub. 606-C) (cont.)

900° BT, Ser. No. 7750

Ser. No.	Time GCT	Date 1957	Latitude N.	Longitude W.	Bkt. Temp. °C	Wind		Air Temp.		Bar. mbs	Wea. ther	Clouds		Vis		Dir. of	Amt. of	Surf. Sal. ‰
						Dir. °T	Force kts.	Dry Bulb °F	Wet Bulb °F			Type	Amt.					
181	0238	8/21	50°00'	165°00'	12.5	34	6	55.0	54.0	24	02	8	6	8	2	34	1	32.67
182	1902	8/21	50 00	165 00	12.3	05	2	55.0	54.0	23	02	8	2	8	1	00	0	32.71
183	0045	8/22	50 00	164 05	13.6	05	2	59.0	57.0	25	03	8	6	8	1	00	0	32.70
184	0435	8/22	50 00	163 22	13.6	05	8	57.0	56.0	25	01	3	1	8	2	00	0	32.67
185	0844	8/22	50 00	162 30	13.2	05	8	54.5	54.5	27	03	8	3	6	2	00	0	32.70
186	1345	8/22	50 30	162 30	12.9	05	2	53.5	53.5	27	02	8	3	6	0	00	0	32.69
187	1730	8/22	51 00	162 30	12.7	05	4	54.0	54.0	28	02	8	9	7	1	00	0	32.65
188	2134	8/22	51 30	162 30	12.9	05	4	57.0	56.0	28	02	5	8	8	1	00	0	32.69
189	0215	8/23	52 03	162 30	13.0	09	4	57.0	56.0	28	02	5	8	8	1	00	0	32.75
190	0530	8/23	52 34	162 30	12.9	09	4	54.5	-	28	02	8	8	7	1	00	0	32.81
191	0919	8/23	53 00	162 30	12.8	09	6	55.0	55.0	27	01	8	2	5	1	00	0	32.78
192	1345	8/23	53 27	162 25	13.1	14	12	54.0	54.0	26	03	8	6	5	1	09	1	32.46
193	1736	8/23	53 56	162 20	12.3	14	12	54.0	54.0	24	01	3	6	7	1	09	1	31.95
194	0500	8/30	56 44	156 20	12.3	27	2	53.5	53.5	09	02	8	9	6	1	14	1	31.82
195	0730	8/30	56 58	155 51	12.2	27	2	53.0	-	08	02	8	9	5	0	00	0	31.02
196	1000	8/30	57 11	155 23	12.4	27	6	52.0	52.0	08	02	8	9	5	2	00	0	31.06
197	1230	8/30	57 24	154 57	11.8	27	12	52.0	52.0	07	02	8	9	5	3	00	0	31.98
198	0344	9/8	58 00	140 00	13.6	09	6	58.0	58.0	14	03	2	4	7	2	09	2	32.25
199	1528	9/8	58 02	139 58	13.1	20	30	55.0	-	18	61	9	9	5	4	20	4	32.28
200	2000	9/8	58 04	139 05	14.0	20	15	57.0	56.0	18	01	3	6	7	3	20	3	32.25
201	2230	9/8	58 04	138 27	13.9	14	10	58.0	57.0	19	02	3	6	7	2	14	2	32.06
202	0100	9/9	58 05	137 50	14.4	14	10	57.0	57.0	20	61	9	9	6	2	14	2	32.01



# Plankton Data, M/V Attu

## Numbers of Organisms per Cubic Meter of Water

STATION	DATE/HOUR (GCT)	DEPTH INTERVAL (m)	DISPLACEMENT VOLUME	MEDUSAE	SIPHONOPHORE	CHAETOGNATHA	GASTROPODA	COPEPODA	EUPHAUSIACEA	AMPHIPODA	OSTRACODA	Crustacean Larvae	TUNICATA	Miscellaneous	Total
1	28/09	90-0	1.8	7.1	10.7	7.1	675.7	3.6	17.8	39.1	71.1	832.2			
		500-90	3.8	2.4	1.6	26.4	118.4	t	20.0	1.6	8.0	178.4			
		500-0	3.9		1.3	26.1	211.5		15.7	18.2	2.6	276.7			
2	8/06	75-0	17.7*		42.7		3208.4		8.5	1706.7	51.2	5017.5			
		500-75	7.9	1.5	27.4		286.5		61.0	32.0	22.9	437.4			
		500-0	45.3*	6.5	10.4	1.3	289.9		22.2	151.5	18.3	501.4			
3	15/05	60-0	16.7	16.0	5.3	10.7	1224.0	5.3	5.3	352.0	16.0	1685.3			
		500-60	12.6		16.4		150.3		19.9	5.2	23.8	210.6			
		500-0	38.3	t	3.4	t	45.9	t	3.8	14.7	4.4	72.2			
4	16/10	75-0	3.0	10.7	21.3	4.3	1105.1	21.3	2.1	91.7	10.7	108.8			
		500-75	29.7	t	5.4		294.6	1.5	10.0	5.4	t	20.8			
		500-0	31.3	2.0	4.6	2.6	350.1	3.3	3.3	22.2	1.3	23.5			
5	18/05	30-0	13.4		64.0	42.7	5354.6	64.0	21.3	2325.3	256.0	8127.9			
		100-30	2.3	9.1	27.9	9.1	2029.7	18.3	9.1	173.7	45.7	2359.1			
		100-0	13.0			19.2	7590.4	19.2	12.8	710.4	108.8	8460.8			
6	19/05	70-0	3.5	9.1	9.1		3003.0		9.1	420.6		3455.9			
7	21/09	125-0	6.6	5.2	2.6	13.1	1478.4	5.2	5.2	15.7	91.4	1632.5			
8	22/07	30-0	13.4	43.4	21.7	6128.8		32.5	10.8	1334.2	32.5	7614.7			
		500-30	26.9	t	5.9	132.0		12.2		12.5	t	164.7			
		500-0	37.0		4.6	156.6		7.8	t	9.1	5.2	184.6			
9	23/07	100-0	5.6	6.5	3.3	3.3	1074.3		6.5	22.9	16.3	1152.7			

Plankton Data, M/V Attu Numbers of Organisms per Cubic Meter of Water

STATION	DATE/HOUR (GCT)	DEPTH INTERVAL (m)	DISPLACEMENT VOLUME	MEDUSAE	SIPHONOPHORE	CHAETOGNATHA	GASTROPODA	COPEPODA	EUPHAUSIACEA	AMPHIPODA	OSTRACODA	Crustacean larvae	TUNICATA	Miscellaneous	Total
10	24/05	35-0 135-35 135-0	8.4 7.2 13.0	9.6 3.3 4.8		19.1 3.3 7.2	3.3	2502.7 796.8 1152.0	9.6	9.6 6.5	19.1	191.0 16.3 12.1	6.5	95.5 49.0 36.2	2856.2 885.0 1221.9
11	8/05	50-0 90-50 90-0	0.2 1.1 2.0			65.3 49.2 29.1	13.1 16.4	1815.4 1969.2 1963.8	13.1	26.1 7.3	13.1	13.1 16.4 21.8		143.7 16.4 36.4	2102.9 2067.6 2072.9
12	15/06	37-0 300-37 300-0	1.6 5.3 9.9	5.0 1.1	2.5 1.1	17.8 49.6 20.7	1.1	4471.1 494.8 807.7	8.7	35.6 12.4 3.3		88.9 3.7		26.7 1.2	4640.1 581.6 837.2
13	17/07	37-0 300-37 (300-0)	1.1 3.6 (2.8)	17.8 3.7		17.8 16.1 (12.0)	2.5 (1.1)	2773.4 119.0 (83.9)	17.8 (1.1)	35.6	17.8 12.4 (3.3)	53.3 1.2		106.7 3.7 (6.5)	3040.2 158.6 (107.9)
14	19/05	37-0 300-0	0.4 5.7	17.8 7.6	4.4	4.4 27.2	8.9	338.8 175.4		1.1	27.2		2.2	48.9 13.1	423.2 253.8
15	21/05	45-0 300-0	0.3 2.5	t 7.6		1.4 67.5		40.2 186.1		t 3.3		t		1.1 8.7	42.7 281.9
16	24/05	55-0 300-0	3.5 2.8	t 1.1		1.1 91.4		257.7 519.2		4.4 13.1	t 46.8	1.5 1.1	t	3.7 6.5	268.4 685.7
17	25/07	22-0 300-0	1.6 5.6	14.9 8.7	4.4	59.5 23.9	29.8	5432.4 1001.4	89.3 2.2	89.3 26.1		74.4 4.4		223.2 43.5	6012.8 1121.1
18	27/05	42-0 90-42 90-0	0.3 1.9 2.5			39.0 34.0 29.1	13.6	3707.3 3558.9 1938.0				78.0 3.6		156.1 27.2	3980.4 3633.7 1970.7

Plankton Data, M/V Attu Numbers of Organisms per Cubic Meter of Water

STATION	DATE/HOUR (GCT)	DEPTH INTERVAL (m)	DISPLACEMENT VOLUME	MEDUSAE	SIPHONOPHORE	CHAETOGNATHA	GASTROPODA	COPEPODA	EUPHAUSIACEA	AMPHIPODA	OSTRACODA	Crustacean Larvae	TUNICATA	Miscellaneous	Total
22	30/05	55-0 300-55 300-0	1.0 3.2 3.2	t	t 3.3	8.8 3.7 45.7		414.0 10.8 52.81		2.2 t 6.5	1.4 13.1	t 4.4		3.0 t 17.4	428.0 15.9 618.5
23	11/08	55-0 300-55 300-0	0.3 4.5 6.3	t 1.6	4.0 6.0	t 48.0 35.9		35.4 229.3 172.6	2.7	4.0 4.4	17.3 6.0	t 4.4	t	13.3 1.1	35.4 318.6 227.6
24	14/06	31-0 300-31 300-0	1.0 6.0 7.0	15.7 t 2.2	1.2 3.3	99.7 5.5 16.3		3063.5 187.1 364.6	42.0 1.1	5.2 3.6 4.4	15.7 1.8		t	31.5 11.0 4.4	3273.3 210.2 398.5
25	15/04	95-0	1.4			19.0	12.0	1498.8		24.1	3.4	37.8		43.0	1638.1
28	17/07	49-0 300-49 300-0	1.5 3.6 6.0	13.7 2.7	2.6	20.0 42.9 14.1		4260.0 383.7 208.5	13.3 3.3	13.3 t	33.3 29.9 12.0		6.7	100.0 9.1 10.9	4460.3 470.9 248.8
30	20/04	49-0 300-49 300-0	0.6 1.9 2.4	66.7 3.9 3.3	10.4	53.3 26.0 23.9		2006.7 163.9 279.6			26.7 6.5 7.6	266.7 17.0 30.5	13.3 1.3 3.3	1126.7 78.0 64.2	3560.1 307.0 412.4
35	8/04	55-0 300-55 300-0	7.7 10.2 8.2	23.7 5.3 2.2	23.7 1.3 6.5	41.5 20.0 10.9	231.1 13.3 2.2	1096.3 267.9 139.4		5.9 1.3 1.1	29.6 2.7	94.8 4.0 1.1	225.2 22.7 28.3	23.7 33.3 8.7	1795.5 371.8 200.4



Plankton Data, M/V Attu Numbers of Copepods per Cubic Meter of Water

STATION	DEPTH INTERVAL (m)	Acartia	Calanus cristatus	Calanus finmarchicus	Calanus plumchrus	Candacia	Eucalanus bungii	Euchaeta japonica	Geetanus	Haloptilus	Heterorhabdus	Metridia lucens	Oithona	Pleuronectes	Pseudocalanus minutus	Miscellaneous
1	90-0	17.8			35.6		110.2		3.6			42.7	362.7	3.6	21.3	78.2
	500-90		1.6		13.6		15.2	3.2	5.6		t	5.6	27.2	3.2	5.6	37.6
	500-0		1.3		26.1		20.9	3.9		1.3		10.4	56.2	2.6	36.6	52.2
2	75-0		8.5	25.6	213.3		921.6					25.6	1390.9		486.4	136.5
	500-75		9.1		6.1		54.9	1.5	1.5			24.4	24.4	1.5	30.5	132.6
	500-0		2.6		14.4		90.1	1.3				10.4	105.8	1.3	31.3	32.7
3	60-0				64.0		602.7						341.3		53.3	202.7
	500-60				17.1		36.5	4.5			5.2	18.6	11.9	t	19.3	37.2
	500-0		t		7.7		13.4	t	t			1.5	4.7	t	2.9	15.7
4	75-0				10.7		450.1					19.2	285.9		238.9	87.5
	500-75		t	12.8	12.3		106.4	3.1	2.3			83.3	34.7		19.3	27.0
	500-0		2.0	7.2	11.8		102.5	t	1.3			43.1	71.8		82.3	28.1
5	30-0	64.0	64.0	106.7	597.3		2432.0						1365.3		704.0	21.3
	100-30	9.1	9.1		100.6		402.3					73.1	886.9		365.7	182.9
	100-0		57.6		275.2		1017.6					12.8	5824.0		249.6	153.6
6	70-0	374.9		201.1	283.4		100.6						1243.4		502.9	301.7
7	125-0		2.6	308.2	292.6		151.5					7.8	310.8		331.8	73.1
8	30-0			108.5			4317.3						1280.0		141.0	282.0
	500-30				15.6	t	25.4	2.1		t	1.0	16.0	24.3		28.8	18.8
	500-0				10.4		62.0	t				17.0	19.6	t	20.2	27.4

Plankton Data, M/V Attu Numbers of Copepoda per Cubic Meter of Water

STATION	DEPTH INTERVAL (m)	Acartia	Calanus crystatus	Calanus finmarchicus	Calanus plumchius	Candacia	Bucalanus bungii	Euchaeta japonica	Gaetanus	Haloptilus	Heterorhabdus	Metridia lucens	Oithona	Pleuromma	Pseudocalanus minutus	Miscellaneous
9	100-0			326.5	378.8		104.5					49.0	65.3		140.4	9.8
10	35-0		9.6	114.6	114.6		831.0					286.6	286.6		477.6	382.1
	135-35		3.3	55.5	49.0		91.4					78.4	140.4		228.6	150.2
	135-0		12.1	55.5	41.1		359.8					82.1	137.7		321.2	142.5
11	50-0	26.1			52.2		39.2					16.4	1436.7		130.6	130.6
	90-50				804.1		16.4						262.6		804.1	65.6
	90-0	29.1			145.5								1316.4		436.4	36.4
12	37-0	1582.2			133.3		8.9					8.9	1680.0		755.6	302.2
	50-37	81.9	6.2	1.2	6.2	1.2	65.7		1.2		2.5	127.8	99.2	1.2	31.0	64.5
	300-0	179.6			39.2		25.0	1.1	1.1			30.5	409.3		105.6	16.3
13	37-0				35.6		337.8					17.8	1795.6		124.4	462.2
	300-37	7.4	8.7		6.2	2.5	32.2		2.5		2.5	7.4	26.0			23.6
	(300-0)		(5.4)		(9.8)		(29.4)		(1.1)				(21.8)	(2.2)	(3.3)	(10.9)
14	37-0		7.2	4.4	244.4		95.8	1.1	2.2		1.1	9.8	66.7		7.2	8.9
	300-0		12.0		9.8	1.1							16.3	1.1	4.4	20.7
15	45-0			t	5.2		1.6					4.4	31.4		t	2.0
	300-0			3.3	25.0		28.3				1.1		79.4		23.9	20.7
16	55-0	31.9	t	t	8.1		26.3		8.7		1.1	1.1	175.6		5.5	9.2
	300-0	41.4	4.4		20.7		100.1	2.2				26.1	288.4	1.1	17.4	7.6
17	22-0	1354.4		59.5	59.5		253.0					29.8	1324.6		1934.9	416.7
	300-0	169.8		19.6	4.4		34.8	2.2	2.2			104.5	306.9		330.9	26.1

# Plankton Data, M/V Attu

## Numbers of Copepods per Cubic Meter of Water

STATION	DEPTH INTERVAL, (m)	Acartia	Calanus cristatus	Calanus flmmarchicus	Calanus plumchrus	Candacia	Eucalanus bungii	Euchaeta japonica	Gaetanus	Haloptilus	Heterorhabdus	Metridia lucens	Oithona	Pleuromma	Pseudocalanus minutus	Micellaeneus
18	42-0	148.3		15.6			7.8						2747.3		647.8	140.5
	90-42	313.2		238.3	442.6							27.2	1155.4		1327.7	54.5
	90-0	80.0		94.5	123.6		3.6					3.6	785.5		734.5	112.7
20	55-0	63.7		4.4	8.1		23.0						260.7		51.9	2.2
	300-55	t		t	t		5.2		t			t	4.3		t	1.3
	300-0	53.3	1.1	1.2	32.7		94.7				3.3	7.6	253.6	1.1	57.7	21.8
23	55-0	7.7		t	t		1.1					1.6	12.4		12.6	t
	300-55	56.0		t	8.0		38.7				1.3	12.0	32.0	4.0	65.3	12.0
	300-0	16.9	1.6	t	6.5		41.4	2.2			1.1	8.7	22.3	2.2	68.6	1.1
24	31-0	424.9		47.2	26.2		466.9					57.7	1133.1		786.9	120.6
	300-31	11.0	t	26.1	7.3	t	24.3		1.2		1.2	78.9	15.2		21.9	t
	300-0	14.1	4.4	14.1	22.9		52.2	1.1	1.1		1.1	74.0	90.3		76.2	13.1
25	95-0	399.4		1.7	10.3		6.9					20.6	560.9		435.3	63.7
28	49-0	600.0			46.7		20.0						313.3		3146.7	133.3
	300-49	49.4		3.9	7.8		39.0		2.7		1.3	16.9	28.6	2.6	215.9	15.6
	300-0	41.9		2.7	7.1		50.6	t				3.8	8.7	2.2	88.2	3.3
30	49-0				133.3		60.0						1700.0		26.7	86.7
	300-49				11.7		20.8					2.6	105.4		10.4	13.0
	300-0		1.1		6.5		5.4					1.1	202.4		14.1	49.0
35	55-0				88.9		29.6					23.7	521.5		314.1	118.5
	300-55	61.3	1.3		18.7		4.0		5.3		5.3	18.7	65.3	1.3	80.0	6.7
	300-0	4.4			20.7		4.4			1.1	1.1	6.5	65.3	2.2	27.2	6.5



**TABULATED DATA, M/V Pioneer**

**Station Data**

**Bathymograph Data**

**Plankton Data**

# Oceanographic Station Data, M/V Pioneer

Station 1: 50°00'N., 175°00'E., 2 June 1957. Messenger time: 0420, 0617 GCT. Weather 03. Clouds: type 6, amt. 7. Wind: 120°T, 15 kts. Sea 3. Swell 1. Bar. 1001 mbs. Temp: dry 41.5°F, wet 40.0°F. BT 24.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	5.3	32.99			0	5.3	32.99	26.07	.000
10	5.21	32.96			10	5.21	32.96	26.06	.020
20	5.21	32.96			20	5.21	32.96	26.06	.039
30	4.68	32.96			30	4.68	32.96	26.12	.059
49	4.33	32.97			50	4.32	32.97	26.16	.096
78	3.56	33.03			75	3.60	33.01	26.27	.142
108	3.43	33.27			100	3.45	33.17	26.41	.184
136	3.53	33.77			150	3.56	33.82	26.92	.254
160	3.58	33.86			200	3.62	33.96	27.02	.309
237	3.64	34.04			250	3.62	34.03	27.08	.361
284	3.56	34.10			300	3.53	34.12	27.16	.410
475	3.28	34.26			400	3.38	34.20	27.23	.501
761	2.82	34.41			500	3.23	34.28	27.31	.585
1046	2.46	34.46			600	3.08	34.33	27.37	.664
					700	2.93	34.38	27.42	.738
					800	2.78	34.42	27.46	.807
					1000	2.52	34.46	27.52	.938

Station 2: 50°00'N., 175°00'E., 10 June 1957. Messenger time: 0322, 0520 GCT. Weather 50. Clouds: type 6, amt. 9. Wind: 320°T, 3 kts. Sea 2, Swell 1. Bar. 1012 mbs. Temp: dry 42.5°F, wet 41.0°F. BT 25.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	6.7	32.97			0	6.7	32.97	25.88	.000
10	5.15	32.96	.64		10	5.15	32.96	26.07	.020
20	5.09	32.96			20	5.09	32.96	26.07	.040
30	4.78	32.96	.64		30	4.78	32.96	26.11	.059
50	4.30	32.96			50	4.30	32.96	26.16	.097
80	3.54	33.03	.63		75	3.65	33.01	26.26	.143
110	3.35	33.51			100	3.41	33.19	26.43	.185
140	3.53	33.85	.14		150	3.56	33.88	26.96	.253
172	3.57	33.92	.09		200	3.54	34.00	27.06	.307
202	3.54	-			250	3.56	34.10	27.14	.356
252	3.56	34.10	.05		300	3.55	34.15	27.18	.403
302	3.55	-			400	3.43	34.23	27.25	.492
502	3.26	-	.04		500	3.26	34.30	27.32	.575
802	2.75	34.43			600	3.10	34.34	27.37	.652
1102	2.38	34.49	.06		700	2.92	34.39	27.43	.725
					800	2.75	34.43	27.48	.794
					1000	2.51	34.47	27.53	.923

Oceanographic Station Data, M/V Pioneer

Station 3: 53°00'N., 175°00'E., 14 June 1957. Messenger time: 0100, 0200 GCT. Weather 02. Clouds: type 4, amt. 8. Wind: 253°T, 3 kts. Sea 2. Swell 1. Bar. 1016 mbs. Temp: dry 46.5°F, wet 46.0°F. BT 33.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	6.6	33.25			0	6.6	33.25	26.12	.000
10	6.15	33.10	.66		10	6.15	33.10	26.06	.019
20	4.49	33.07			20	4.49	33.07	26.23	.038
30	4.3	33.08	.69		30	4.30	33.08	26.25	.056
50	4.22	33.08			50	4.22	33.08	26.26	.092
80	3.18	33.10	.65		75	3.23	33.09	26.36	.135
110	3.05	33.21			100	3.07	33.15	26.43	.176
140	3.50	33.49	.42		150	3.49	33.52	26.68	.251
168	3.44	33.58	.36		200	3.30	33.69	26.83	.316
200	3.30	33.69			250	3.30	33.82	26.94	.376
250	3.3	33.82	.20		300	3.37	33.93	27.02	.431
300	3.37	33.93			400	3.51	34.05	27.10	.534
500	3.41	34.15	.05		500	3.41	34.15	27.19	.630
800	2.99	34.29			600	3.27	34.20	27.25	.720
1099	2.60	34.42	.04		700	3.12	34.24	27.29	.806
					800	2.99	34.29	27.34	.883
					1000	2.72	34.38	27.44	1.039

Station 4: 56°00'N., 175°00'E., 17 June 1957. Messenger time: 0025, 0130 GCT. Weather 02. Clouds: type 6, amt. 7. Wind: 050°T, 10 kts. Sea 4. Swell 3. Bar. 1010 mbs. Temp: dry 43.5°F, wet 42.0°F. BT 34.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	5.5	33.22			0	5.5	33.22	26.23	.000
10	5.41	33.13	.67		10	5.41	33.13	26.17	.018
20	5.08	33.11			10	5.08	33.11	26.19	.037
30	3.90	33.12	.68		30	3.90	33.12	26.33	.054
49	3.66	33.13			50	3.66	33.13	26.36	.088
79	2.32	33.16	.66		75	2.45	33.15	26.48	.129
108	1.90	33.22			100	1.99	33.20	26.56	.167
138	2.75	33.49	.42		150	3.40	33.60	26.75	.237
164	3.54	33.72	.24		200	3.55	33.86	26.95	.298
194	3.55	33.85			250	3.54	33.96	27.03	.353
244	3.5	33.95	.10		300	3.53	34.01	27.07	.405
293	3.53	34.00			400	3.51	34.12	27.16	.504
490	3.42	34.19	.05		500	3.40	34.20	27.23	.595
786	3.00	34.33			600	3.28	34.25	27.28	.682
1082	2.61	34.42	.04		700	3.13	34.30	27.34	.763
					800	3.00	34.34	27.38	.841
					1000	2.73	34.40	27.45	.987



# Oceanographic Station Data, M/V Pioneer

Station 5: 53°00'N., 180°00', 22 June 1957. Messenger time: 0025, 0130 GCT. Weather 02. Clouds: type 4, amt. 8. Wind: 090°T, 5 kts. Sea 3. Swell 1. Bar. 1015 mbs. Temp: dry 46.0°F, wet 44.5°F. BT 48.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	C <sub>2</sub> (μg-at/L)	PO <sub>4</sub> -P (μg-at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	ΔD (dyn m)
0	6.4	33.23			0	6.4	33.23	25.13	.000
10	6.22	33.14	.68		10	6.22	33.14	25.08	.019
20	5.90	33.14			20	5.90	33.14	25.12	.038
30	5.63	33.14	.67		30	5.63	33.14	25.15	.057
50	4.79	33.14			50	4.79	33.14	25.25	.094
80	3.22	33.25	.58		75	3.47	33.22	25.45	.136
110	3.48	33.40			100	3.32	33.34	25.56	.175
140	3.58	33.48	.40		150	3.60	33.56	25.70	.246
170	3.66	33.64	.32		200	3.64	33.73	25.83	.311
200	3.64	33.73			250	3.62	33.84	25.92	.371
250	3.62	33.84	.19		300	3.63	33.93	27.00	.427
300	3.63	33.93			400	3.50	34.06	27.11	.531
500	3.40	34.16	.05		500	3.40	34.16	27.20	.627
800	2.98	34.30			600	3.25	34.21	27.25	.716
900	2.89	34.34	.04		700	3.12	34.26	27.31	.801
					800	2.98	34.30	27.35	.881
					1000	(2.75)	(34.38)	27.44	1.031

Station 6: 56°00'N., 175°00'W., 30 June 1957. Messenger time: 0110, 0225 GCT. Weather 02. Clouds: type 6, amt. 8. Wind: 180°T, 1 kt. Sea 2. Swell 1. Bar. 1017 mbs. Temp: dry 46.0°F, wet 44.5°F. BT 62.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	C <sub>2</sub> (μg-at/L)	PO <sub>4</sub> -P (μg-at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	ΔD (dyn m)
0	7.7	32.97			0	7.7	32.97	25.75	.000
10	7.50	32.97	.66		10	7.50	32.97	25.78	.022
20	6.60	32.97			20	6.60	32.97	25.90	.044
30	5.56	32.99	.67		30	5.56	32.99	26.04	.065
50	3.84	33.07			50	3.84	33.07	26.29	.102
80	3.58	33.08	.54		75	3.60	33.08	26.32	.145
110	3.44	33.23			100	3.45	33.16	26.40	.187
140	3.43	33.29	.53		150	3.49	33.32	26.52	.266
166	3.60	33.35	.46		200	3.72	33.44	26.60	.341
195	3.60	-			250	3.70	33.57	26.70	.412
244	3.71	33.56	.34		300	3.64	33.72	26.83	.477
291	3.66	33.70			400	3.53	33.94	27.01	.594
488	3.46	34.03	.12		500	(3.44)	(34.04)	27.10	.699

# Oceanographic Station Data, M/V Pioneer

Station 7: 53°00'N., 175°00'W., 3 July 1957. Messenger time: 0030, 0135 GCT. Weather 01. Clouds: type 7, amt. 7. Wind: 290°T, 10 kts. Sea 5. Swell 1. Bar. 1015 mbs. Temp: dry 53.0°F, wet 50.0°F. BT 69.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	7.0	33.15			0	7.0	33.15	25.98	.000
10	6.93	33.13	.65		10	6.93	33.13	25.98	.020
20	6.79	33.13			20	6.79	33.13	26.00	.041
29	6.48	33.13	.66		30	6.48	33.13	26.04	.061
49	5.36	33.16			50	5.30	33.16	26.21	.099
78	3.22	33.23	.59		75	3.40	33.22	26.45	.141
108	2.98	33.27			100	2.95	33.26	26.52	.180
137	3.01	33.31	.60		150	3.16	33.36	26.59	.255
166	3.34	33.47	.45		200	3.55	33.65	26.78	.324
196	3.55	33.64			250	3.63	33.78	26.88	.386
245	3.63	33.77	.22		300	3.58	33.87	26.95	.445
294	3.59	33.86			400	3.42	34.00	27.07	.553
493	3.45	34.08	.08		500	3.44	34.08	27.13	.653
790	3.06	34.26			600	3.31	34.15	27.20	.748
1088	2.72	34.38	.06		700	3.19	34.21	27.26	.837
					800	3.05	34.27	27.32	.922
					1000	2.82	34.35	27.41	1.078

Station 8: 50°00'N., 175°00'W., 5 July 1957. Messenger time: 2255, 2345 GCT. Weather 02. Clouds: type 0, amt. 8. Wind: 020°T, 5 kts. Sea 4. Swell 1. Bar. 1019 mbs. Temp: Dry 50.0°F, Wet 47.0°F. BT 76.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	8.2	32.92			0	8.2	32.92	25.64	.000
10	8.08	32.84	.63		10	8.08	32.84	25.59	.024
20	7.96	32.85			20	7.96	32.85	25.62	.048
30	7.93	32.85	.62		30	7.93	32.85	25.62	.072
49	5.80	32.95			50	5.80	32.95	25.98	.116
79	5.03	32.98	.65		75	5.15	32.97	26.07	.166
109	4.39	33.23			100	4.55	33.10	26.24	.213
138	3.77	33.65	.31		150	3.68	33.70	26.31	.289
170	3.58	33.76	.26		200	3.43	33.82	26.93	.349
200	3.43	33.82			250	3.53	33.92	27.00	.405
250	3.53	33.92			300	3.55	33.98	27.04	.459
300	3.55	33.98			400	3.53	34.08	27.12	.560
500	3.41	34.18	.06		500	3.41	34.18	27.22	.654
800	2.97	34.33			600	3.28	34.24	27.27	.741
1100	2.57	34.42	.06		700	3.12	34.29	27.33	.824
					800	2.97	34.33	27.37	.902
					1000	2.70	34.39	27.45	1.049



# Oceanographic Station Data, M/V Pioneer

Station 9: 51°00'N., 176°00'W., 8 July 1957. Messenger time: 0750, 0842 GCT. Weather C2. Clouds: type 6, amt. 8. Wind: 050°T, 15 kts. Sea 4. Swell 1. Bar. 1014 mbs. Temp: dry 48.0°F, wet 47.0°F. BT 80.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (μg-at/L)	PO <sub>4</sub> -P (μg-at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	8.6	32.83			0	8.6	32.83	25.50	.000
10	8.26	32.71	.64		10	8.26	32.71	25.46	.025
20	7.70	32.74			20	7.70	32.74	25.57	.050
30	7.54	32.75	.64		30	7.54	32.75	25.60	.074
50	4.80	32.85			50	4.80	32.85	26.02	.118
80	4.40	33.25	.46		75	4.45	33.12	26.27	.165
110	4.54	33.64			100	4.29	33.56	26.63	.205
140	4.68	33.84	.20		150	4.58	33.87	26.85	.271
170	4.40	33.92	.16		200	4.25	33.93	26.93	.331
200	4.25	33.93			250	4.19	34.02	27.01	.387
250	4.19	34.02	.07		300	4.01	34.07	27.07	.439
300	4.01	34.07			400	3.82	34.13	27.14	.539
500	3.63	34.19	.04		500	3.63	34.19	27.20	.634
800	3.04	34.34			600	3.44	34.24	27.26	.723
904	2.85	34.41	.05		700	3.25	34.29	27.32	.807
					800	3.04	34.34	27.38	.886
					1000	(2.66)	(34.42)	27.47	1.030

Station 10: 56°00'N., 175°00'E., 16 July 1957. Messenger time: 0130, 0240 GCT. Weather 02. Clouds: type 8, amt. 8. Wind: 180°T, 2 kts. Sea 2. Swell 1. Bar. 1018 mbs. Temp: dry 52.0°F, wet 50.5°F. BT 96.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (μg-at/L)	PO <sub>4</sub> -P (μg-at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	8.75	33.11			0	8.75	33.11	25.70	.000
10	8.28	33.09			10	8.28	33.09	25.76	.023
20	7.76	33.11			20	7.76	33.11	25.85	.045
30	5.98	33.11			30	5.98	33.11	26.09	.065
50	3.70	33.13			50	3.70	33.13	26.35	.102
75	2.42	33.16			75	2.42	33.16	26.49	.142
100	2.04	33.19			100	2.04	33.19	26.54	.180
125	2.46	33.38			150	3.12	33.68	26.84	.248
150	3.12	33.68			200	3.55	33.81	26.91	.308
175	3.46	33.74			250	3.55	33.91	26.99	.365
325	3.51	34.02			300	3.53	33.99	27.05	.418
(554)	3.31	34.21			400	3.50	34.11	27.15	.518
764	3.03	34.29			500	3.41	34.18	27.22	.611
					600	3.27	34.22	27.26	.699
					700	3.12	34.27	27.31	.783
					800	(2.99)	(34.31)	27.36	.863



# Oceanographic Station Data, M/V Pioneer

Station 11: 53°00'N., 175°00'E., 18 July 1957. Messenger time: 2245, 2412 GCT. Weather O2. Clouds: type 7, amt. 8. Wind: 270°T, 5 kts. Sea 3. Swell 1. Bar. 1019 mbs. Temp: dry 49.5°F, wet 47.5°F. BT 103.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (μg-at/L)	PO <sub>4</sub> -P (μg-at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	8.2	33.09			0	8.2	33.09	25.77	.000
10	7.87	33.03	.67		10	7.87	33.03	25.77	.022
20	7.18	33.06			20	7.18	33.06	25.89	.044
30	6.00	33.07	.64		30	6.00	33.07	26.05	.065
50	4.27	33.12			50	4.27	33.12	26.29	.102
75	3.20	33.17	.59		75	3.20	33.17	26.43	.144
100	3.86	33.29			100	3.86	33.29	26.46	.184
124	3.80	33.35	.48		150	3.70	33.48	26.63	.259
149	3.70	33.48	.40		200	3.88	33.68	26.77	.327
174	3.70	33.58			250	3.80	33.79	26.87	.390
199	3.88	33.68	.28		300	3.65	33.87	26.95	.449
299	3.65	33.87			400	3.56	33.98	27.04	.559
499	3.48	34.08	.08		500	3.48	34.08	27.13	.660
788	3.18	34.24			600	3.38	34.15	27.19	.756
1080	2.85	34.36	.04		700	3.28	34.20	27.24	.846
					800	3.17	34.25	27.29	.933
					1000	2.95	34.33	27.38	1.095

Station 12: 50°00'N., 175°00'E., 21 July 1957. Messenger time: 0122, 0600 GCT. Weather O2. Clouds: type 0, amt. 8. Wind: 140°T, 10 kts. Sea 3. Swell 1. Bar. - mbs. Temp: dry 50.0°F, wet 48.0°F. BT 111.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (μg-at/L)	PO <sub>4</sub> -P (μg-at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	8.9	32.95			0	8.9	32.95	25.55	.000
10	8.54	32.91	.56	0.8	10	8.54	32.91	25.58	.024
20	7.65	32.92			20	7.65	32.92	25.71	.048
30	6.12	32.95	.59	0.9	30	6.12	32.95	25.94	.070
49	4.24	33.00			50	4.22	33.00	26.20	.109
74	3.61	33.07	.58	0.9	75	3.59	33.07	26.31	.153
98	3.44	33.22			100	3.45	33.23	26.46	.195
123	4.23	33.73	.22	1.2	150	3.90	33.88	26.93	.263
150	3.90	33.88	.14		200	3.96	34.02	27.03	.318
175	4.10	33.95			250	3.82	34.05	27.07	.370
200	3.96	34.02	.09		300	3.74	34.08	27.10	.420
313	3.70	34.09			400	3.54	34.16	27.19	.516
513	3.32	34.24	.04		500	3.35	34.24	27.27	.604
812	2.87	34.36			600	3.19	34.29	27.32	.687
1112	2.45	34.47	.06		700	3.03	34.32	27.36	.766
					800	2.89	34.36	27.41	.841
					1000	2.60	34.43	27.49	.980

# Oceanographic Station Data, M/V Pioneer

Station 13: 52°00'N., 175°00'E., 23 July 1957. Messenger time: 1800, 1905 GCT. Weather 45. Clouds: type 0, amt. 9. Wind: 340°T, 5 kts. Sea 3. Swell 1. Bar. --mbs. Temp: dry 49.0°F, wet 48.0°F. BT 125.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ L (dyn m)
0	9.1	33.04			0	9.1	33.04	25.59	.000
10	8.85	32.99	.54		10	8.85	32.99	25.59	.024
20	6.86	33.02	.58		20	6.86	33.02	25.90	.047
30	6.15	33.03	.56		30	6.15	33.03	26.00	.068
50	4.02	33.09	.57		50	4.02	33.09	26.29	.105
75	3.28	33.12	.57		75	3.28	33.12	26.38	.148
100	3.25	33.16	.56		100	3.25	33.16	26.42	.189
125	3.60	33.28	.44						

Station 14: 53°00'N., 175°00'E., 24 July 1957. Messenger time: 0645, 0825 GCT. Weather 02. Clouds: type 4, amt. 7. Wind: 320°T, 5 kts. Sea 3. Swell 1. Bar. --mbs. Temp: dry 51.0°F, wet 50.0°F. BT 126.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ L (dyn m)
0	9.65	32.97			0	9.65	32.97	25.45	.000
10	8.65	32.97	.57		10	8.65	32.97	25.60	.025
20	8.3	32.97			20	8.30	32.97	25.66	.048
30	6.27	32.97	.60		30	6.27	32.97	25.94	.070
50	4.58	33.07			50	4.58	33.07	26.21	.109
75	3.81	33.11	.52		75	3.81	33.11	26.33	.153
100	3.46	33.14			100	3.46	33.14	26.38	.196
125	3.50	33.24	.48		150	3.02	33.37	26.61	.273
148	3.02	33.36	.44		200	3.02	33.68	26.85	.340
172	3.12	33.53			250	3.23	33.82	26.94	.399
197	3.02	33.67	-		300	3.45	33.92	27.00	.454
295	3.46	33.92			400	3.53	34.02	27.08	.560
491	3.51	34.11	.05		500	3.49	34.12	27.16	.659
786	3.08	34.30			600	3.33	34.18	27.22	.751
800	2.93	34.34	.03		700	3.16	34.25	27.29	.838
					800	2.99	34.31	27.36	.919



# Oceanographic Station Data, M/V Pioneer

Station 15: 54°00'N, 175°00'E., 25 July 1957. Messenger time: 0540, 0645 GCT. Weather 50. Clouds: type 0, amt. 8. Wind: 340°T, 5 kts. Sea 3. Swell 1. Bar. 1017 mbs. Temp: dry 51.0°F, wet 50.0°F. BT 130.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (mg-at/L)	PO <sub>4</sub> -P (μg-at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	9.6	33.05			0	9.6	33.05	25.52	.000
10	9.38	33.04	-		10	9.38	33.04	25.54	.025
20	8.31	33.04			20	8.31	33.04	25.71	.048
30	7.00	33.06	.61		30	7.00	33.06	25.91	.070
50	4.86	33.08			50	4.86	33.08	26.19	.110
75	3.40	33.10	.59		75	3.40	33.10	26.36	.154
100	3.14	33.22			100	3.14	33.22	26.48	.194
125	2.68	33.32	.51		150	3.26	33.50	26.69	.268
150	3.26	33.50	.36		200	3.27	33.79	26.92	.331
175	3.37	33.73			250	3.44	33.88	26.97	.388
200	3.27	-	.24		300	3.47	33.96	27.03	.442
300	3.47	33.96			400	3.45	34.10	27.15	.543
500	3.42	34.20	.05		500	3.42	34.20	27.23	.635
800	3.02	34.31			600	3.28	34.24	27.27	.722
910	2.82	34.36	.03		700	3.15	34.28	27.32	.805
					800	3.02	34.31	27.35	.885
					1000	(2.71)	(34.39)	27.45	1.033

Station 16: 55°00'N., 175°00'E., 26 July 1957. Messenger time: 0538, 0700 GCT. Weather 02. Clouds: type 5, amt. 8. Wind: 180°T, 5 kts. Sea 2. Swell 1. Bar. 1017 mbs. Temp: dry 51.0°F, wet 50.0°F. BT 133.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (mg-at/L)	PO <sub>4</sub> -P (μg-at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	9.8	33.10			0	9.8	33.10	25.52	.000
10	9.53	33.09	.57	0.6	10	9.53	33.09	25.56	.025
20	8.4	33.10			20	8.44	33.10	25.74	.048
30	7.16	33.15	.62	0.6	30	7.16	33.15	25.96	.070
50	4.30	33.16			50	4.30	33.16	26.32	.107
75	3.72	33.24	.59	1.0	75	3.72	33.24	26.44	.149
125	3.23	33.39	.52		100	3.17	33.31	26.55	.188
149	3.58	33.49	.41		150	3.58	33.49	26.65	.261
174	3.59	33.59			200	3.53	33.66	26.79	.328
199	3.53	33.66	.30		250	3.53	33.81	26.91	.389
298	3.60	33.94			300	3.60	33.94	27.01	.445
497	3.44	34.15	.06		400	3.58	34.02	27.07	.551
796	3.07	34.29			500	3.43	34.15	27.19	.649
1094	2.65	34.42	.04		600	3.30	34.21	27.25	.739
					700	3.18	34.25	27.29	.824
					800	3.03	34.30	27.35	.906
					1000	2.77	34.38	27.43	1.057



Oceanographic Station Data, H/V Pioneer

Station 17: 56°00'N., 175°00'E., 27 July 1957. Messenger time: 0540, 0720 GCT. Weather 02. Clouds: type 5., amt. 8. Wind: 230°T, 15 kts. Sea 4. Swell 1. Bar. 1014 mbs. Temp: dry 50.5°F, wet 49.5°F. BT 136.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/‰)	C <sub>2</sub> (μg-at/L)	PO <sub>4</sub> -P (μg-at/L)	DEPTH (m)	T (°C)	S (°/‰)	σ <sub>t</sub> (g/L)	ΔD (dyn m)
0	9.85	33.13			0	9.85	33.13	25.54	.000
10	9.57	33.12	.60		10	9.57	33.12	25.58	.024
20	7.98	33.11			20	7.98	33.11	25.82	.047
30	5.92	33.12	.65		30	5.92	33.12	26.10	.068
50	3.79	33.13			50	3.79	33.13	26.34	.104
75	2.45	33.17	.59		75	2.45	33.17	26.49	.145
100	2.02	33.25			100	2.02	33.25	26.59	.182
125	2.40	33.40	.48		150	3.19	33.48	26.68	.253
150	3.19	33.48	.30		200	3.48	33.81	26.91	.317
175	3.31	33.75			250	3.52	33.92	27.00	.373
200	3.48	33.81	-		300	3.57	34.02	27.07	.426
300	3.57	34.02			400	3.55	34.11	27.15	.525
500	3.45	34.17	.05		500	3.45	34.17	27.20	.618
800	-	34.33			600	3.30	34.21	27.25	.708
885	2.87	34.34	.04		700	3.15	34.26	27.30	.793
					800	3.00	34.30	27.35	.873
					1000	(2.73)	(34.39)	27.44	1.023

Station 18: 53°00'N., 175°00'E., 30 July 1957. Messenger time: 0045, 0220 GCT. Weather 01. Clouds: type 4, amt. 3. Wind: 180°T, 5 kts. Sea 2. Swell 1. Bar. 1020 mbs. Temp: dry 55.0°F, wet 53.0°F. BT 145.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/‰)	C <sub>2</sub> (μg-at/L)	PO <sub>4</sub> -P (μg-at/L)	DEPTH (m)	T (°C)	S (°/‰)	σ <sub>t</sub> (g/L)	ΔD (dyn m)
0	10.1	33.00			0	10.1	33.00	25.40	.000
10	10.0	32.98	.52		10	10.00	32.98	25.40	.026
20	9.15	-			20	9.15	33.00	25.55	.051
30	7.11	33.06	.61		30	7.11	33.06	25.90	.074
50	4.44	33.07			50	4.44	33.07	26.23	.113
75	3.44	33.08	.59		75	3.44	33.08	26.34	.157
100	2.82	33.11			100	2.82	33.11	26.42	.198
125	2.05	33.19	.56		150	1.33	33.20	26.60	.275
148	1.33	33.20	.55		200	3.13	33.71	26.87	.341
172	2.22	33.46			250	3.32	33.85	26.96	.400
196	3.11	33.69	.29		300	3.45	33.96	27.04	.454
294	3.45	33.95			400	3.52	34.06	27.11	.556
490	3.49	34.13	.06		500	3.43	34.14	27.18	.653
790	3.08	34.30			600	3.34	34.20	27.24	.744
1090	2.72	34.40	.05		700	3.20	34.26	27.30	.830
					800	3.05	34.31	27.35	.911
					1000	2.81	34.38	27.43	1.061

# Oceanographic Station Data, M/V Pioneer

Station 19: 50°00'N., 175°00'E., 8 August 1957. Messenger time: 0605, 0710 CCT. Weather 47. Clouds: type 0, amt. 9. Wind: 180°T, 7 kts. Sea 3. Swell 1. Bar. 1020 mbs. Temp: dry 50.5°F, wet 50.0°F. BT 171.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (‰)	O <sub>2</sub> (mg-at/L)	PO <sub>4</sub> -P (μg-at/L)	DEPTH (m)	T (°C)	S (‰)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	9.5	32.86		0.6	0	9.5	32.86	25.39	.000
10	9.2	32.86	.58	0.7	10	9.27	32.86	25.42	.026
20	9.03	32.91			20	9.03	32.91	25.50	.051
30	8.60	32.91	.58	0.8	30	8.60	32.91	25.57	.076
50	5.40	32.97			50	5.40	32.97	25.04	.120
75	3.73	33.04	.57	0.8	75	3.73	33.04	26.28	.167
100	3.42	33.18			100	3.42	33.18	26.42	.209
125	3.38	33.64	.28	1.3	150	3.44	33.79	26.90	.279
150	3.44	33.79	.18		200	3.32	33.92	27.02	.334
174	3.46	33.87			250	3.38	34.00	27.07	.386
199	3.32	33.92	.12		300	3.45	34.07	27.12	.436
299	3.45	34.07			400	3.38	34.18	27.22	.529
499	3.30	34.26	.03		500	3.30	34.26	27.29	.615
799	2.83	34.37			600	3.14	34.30	27.34	.696
1099	2.40	34.47	.06		700	2.99	34.33	27.37	.774
					800	2.83	34.37	27.42	.848
					1000	2.53	34.44	27.50	.984

Station 20: 53°00'N., 175°00'E., 11 August 1957. Messenger time: 0605, 0720 CCT. Weather 46. Clouds: type 0, amt. 8. Wind: 180°T, 10 kts. Sea 6. Swell 1. Bar. 1010 mbs. Temp: dry 48.8°F, wet 47.8°F. BT 178.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (‰)	O <sub>2</sub> (mg-at/L)	PO <sub>4</sub> -P (μg-at/L)	DEPTH (m)	T (°C)	S (‰)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	8.7	33.00		0.4	0	8.7	33.00	25.62	.000
10	8.60	33.01	.60	0.5	10	8.60	33.01	25.64	.024
20	6.91	33.04			20	6.91	33.04	25.91	.046
30	5.88	33.07	.56	0.8	30	5.88	33.07	26.07	.066
50	5.25	33.20			50	5.25	33.20	26.24	.104
75	4.39	33.25	.48	1.0	75	4.39	33.25	26.38	.147
100	4.01	33.33			100	4.01	33.33	26.48	.187
125	4.11	33.45	.38	1.1	150	4.15	33.53	26.62	.262
149	4.15	33.53	.34		200	4.00	33.59	26.69	.333
174	4.1	33.56			250	3.97	33.69	26.77	.400
199	4.00	33.59	.32		300	3.91	33.79	26.86	.463
298	3.92	33.79			400	3.74	33.93	26.98	.580
498	3.52	34.04	.09		500	3.51	34.04	27.10	.686
797	3.18	34.24			600	3.40	34.12	27.17	.785
1096	2.78	34.38	.04		700	3.28	34.19	27.23	.877
					800	3.17	34.24	27.29	.964
					1000	2.89	34.34	27.39	1.125



# Oceanographic Station Data, M/V Pioneer

Station 21: 54°30'N., 175°00'E., 13 August 1957. Messenger time: 0305, 2003 OCT. Weather 46. Clouds: type 0, amt. 8. Wind: 090 T, 5 kts. Sea 4. Swell 1. Bar. 1003 mbs. Temp: dry 50.0°F, wet 50.0°F. BT 191.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (‰)	O <sub>2</sub> (ml- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (‰)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	10.15	33.12			0	10.15	33.12	25.48	.000
10	9.92	33.08	.56		10	9.92	33.08	25.49	.025
20	9.08	33.12			20	9.08	33.12	25.66	.049
30	7.29	33.12	.50		30	7.29	33.12	25.92	.072
50	4.06	33.14			50	4.06	33.14	26.32	.110
75	3.25	33.19	.55		75	3.25	33.19	26.44	.151
99	2.94	33.23			100	2.94	33.23	26.50	.190
124	2.91	33.32	.49		150	3.34	33.50	26.68	.263
150	3.34	33.50	.39		200	3.55	33.71	26.83	.329
175	3.57	33.62			250	3.59	33.84	26.93	.389
200	3.55	33.71	.24		300	3.62	33.93	27.00	.445
300	3.62	33.93			400	3.59	34.06	27.10	.550
500	3.41	34.13	.06		500	3.41	34.13	27.18	.647
799	2.98	34.29			600	3.28	34.19	27.23	.738
1097	2.65	34.40	.04		700	3.12	34.24	27.29	.824
					800	2.98	34.29	27.34	.906
					1000	2.76	34.37	27.43	1.058

Station 22: 56°00'N., 175°00'E., 15 August 1957. Messenger time: 0025, 0145 OCT. Weather 02. Clouds: type 6, amt. 6. Wind: 320 T, 10 kts. Sea 4. Swell 1. Bar. 1004 mbs. Temp: dry 54.5°F, wet 52.5°F. BT 197.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (‰)	O <sub>2</sub> (ml- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (‰)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	10.8	32.94			0	10.8	32.94	25.23	.000
10	10.68	33.09	.55		10	10.68	33.09	25.37	.027
19	9.66	33.10			20	9.66	33.10	25.55	.052
29	6.04	33.11	.63		30	5.95	33.11	26.09	.074
48	4.02	33.11			50	3.93	33.11	26.31	.111
72	2.70	33.14	.59		75	2.62	33.15	26.46	.152
96	2.47	33.23			100	2.50	33.26	26.56	.190
120	3.20	33.47	.42		150	3.43	33.56	26.72	.261
150	3.43	33.56	.33		200	3.35	33.78	26.90	.324
175	3.45	33.70			250	3.52	33.91	26.99	.381
200	3.35	33.78	.21		300	3.60	33.99	27.05	.434
300	3.61	33.99			400	3.57	34.09	27.13	.535
498	3.44	34.17	.05		500	3.44	34.17	27.21	.630
796	3.02	34.34			600	3.30	34.24	27.27	.718
1094	2.64	34.44	.05		700	3.15	34.29	27.33	.800
					800	3.00	34.34	27.38	.879
					1000	2.77	34.41	27.46	1.024



# Oceanographic Station Data, M/V Pioneer

Station 23: 53°00'N., 175°00'E., 16-17 August 1957. Messenger time: 2350, 0252 GCT. Weather 02. Clouds: type 6, amt. 8. Wind: 320°T, 2 kts. Sea 3. Swell 1. Bar. - mbs. Temp: dry 51.0°F, wet 49.5°F. BT 203.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	C <sub>2</sub> (μg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	10.1	33.03			0	10.1	33.03	25.42	.000
10	9.61	33.03	.58		10	9.61	33.03	25.50	.025
20	9.35	33.04			20	9.35	33.04	25.55	.050
30	8.12	33.07	.59		30	8.12	33.07	25.76	.073
50	4.62	33.10			50	4.62	33.10	25.24	.114
75	3.74	33.15	.58		75	3.74	33.15	25.36	.157
100	3.56	33.23			100	3.56	33.23	25.45	.198
125	3.52	33.31	.52		150	3.61	33.38	25.56	.276
148	3.60	33.37	.45		200	3.72	33.62	25.74	.346
173	3.73	33.51			250	3.68	33.73	25.83	.410
198	3.72	33.61	.32		300	3.51	33.82	26.92	.471
298	3.52	33.81			400	3.45	33.99	27.06	.581
498	3.37	34.12			500	3.38	34.12	27.17	.680
798	3.07	34.30			600	3.28	34.18	27.23	.772
1127	2.78	34.43	.05		700	3.11	34.24	27.29	.858
					800	3.07	34.30	27.34	.940
					1000	2.90	34.40	27.44	1.091

Station 24: 51°30'N., 175°00'E., 19 August 1957. Messenger time: 0725, 0902 GCT. Weather 02. Clouds: type 4, amt. 8. Wind: 250°T, 3 kts. Sea 2. Swell 1. Bar. 1019 mbs. Temp: dry 51.5°F, wet 50.5°F. BT 207.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	C <sub>2</sub> (μg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	9.65	32.89		0.6	0	9.65	32.89	25.39	.000
10	8.04	33.00	.56	1.1	10	8.04	33.00	25.72	.024
20	7.32	33.11			20	7.32	33.11	25.91	.046
30	6.16	33.18	.49	1.4	30	6.16	33.18	26.12	.066
50	5.44	33.24			50	5.44	33.24	26.25	.103
75	5.13	33.30	.41	1.2	75	5.13	33.30	26.34	.147
100	4.89	33.36			100	4.89	33.36	26.41	.188
125	4.72	33.39	.38		150	4.65	33.42	26.49	.268
150	4.65	33.42	.38		200	4.42	33.52	26.59	.345
175	4.63	33.49			250	4.42	33.64	26.68	.416
200	4.42	33.52	.34		300	4.40	33.87	26.87	.481
300	4.40	33.87			400	4.14	34.02	27.02	.597
500	3.92	34.12	.05		500	3.92	34.12	27.12	.701
800	3.25	34.26			600	3.70	34.18	27.19	.798
1141	2.83	34.39	.07		700	3.48	34.23	27.25	.889
					800	3.25	34.26	27.29	.975
					1000	2.98	34.34	27.38	1.137

Oceanographic Station Data, M/V Pioneer

Station 25: 51°30'N., 175°00'E., 23 August 1957. Messenger time: 0515, 0714 GCT. Weather 02. Clouds: type 4, amt. 8. Wind: 180°T, 10 kts. Sea 5. Swell 1. Bar 1006 mbs. Temp: dry 50.5°F, wet 49.5°F. HT 213.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (‰)	O <sub>2</sub> (μg-at/L)	PO <sub>4</sub> -P (μg-at/L)	DEPTH (m)	T (°C)	S (‰)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	8.90	32.90			0	8.90	32.90	25.51	.000
10	8.72	32.90	.16		10	8.72	32.90	25.54	.025
20	8.66	32.90			20	8.66	32.90	25.55	.049
30	7.72	32.99	.55		30	7.72	32.99	25.76	.073
50	5.82	33.16			50	5.82	33.16	26.15	.114
75	5.25	33.29			75	5.25	33.29	26.31	.159
100	5.00	33.36			100	5.00	33.36	26.40	.201
125	4.84	33.39	.38		150	4.76	33.45	26.50	.281
150	4.76	33.45	.37		200	4.53	33.52	26.58	.358
175	4.62	33.49			250	4.48	33.60	26.65	.430
200	4.53	33.52	.32		300	4.72	33.69	26.69	.501
300	4.72	33.69			400	4.25	33.95	26.95	.628
500	3.96	34.08	.05		500	3.96	34.08	27.08	.738
800	3.36	34.27			600	3.75	34.15	27.16	.838
1100	2.84	34.38	.05		700	3.55	34.21	27.23	.932
					800	3.36	34.27	27.29	1.019
					1000	3.01	34.34	27.38	1.181

Station 26: 53°00'N., 175°00'E., 24 August 1957. Messenger time: 0850, 0945 GCT. Weather 02. Clouds: type -, amt. 8. Wind: 180°T, 1 kt. Sea 3. Swell 1. Bar 1004 mbs. Temp: dry 50.0°F, wet 49.0°F. HT 218.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (‰)	O <sub>2</sub> (μg-at/L)	PO <sub>4</sub> -P (μg-at/L)	DEPTH (m)	T (°C)	S (‰)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	9.8	33.06			0	9.8	33.06	25.49	.000
10	9.64	33.04	.57		10	9.64	33.04	25.50	.025
20	9.52	33.04			20	9.52	33.04	25.52	.050
30	9.45	33.04	.58		30	9.45	33.04	25.53	.074
50	4.70	33.10			50	4.70	33.10	26.23	.117
75	3.84	33.15	.54		75	3.84	33.15	26.35	.161
100	3.45	33.23			100	3.45	33.23	26.46	.202
125	3.40	33.32	.50		150	3.48	33.39	26.58	.278
148	3.47	33.39	.45		200	3.79	33.63	26.78	.347
173	3.68	33.51			250	3.70	33.73	26.87	.410
198	3.79	33.68	.29		300	3.46	33.82	26.92	.469
298	3.46	33.82			400	3.49	33.98	27.05	.580
498	3.49	34.10			500	3.48	34.10	27.15	.681
798	3.20	34.28			600	3.38	34.18	27.22	.774
1128	2.72	34.39	.05		700	3.28	34.24	27.27	.862
					800	3.18	34.28	27.32	.946
					1000	2.90	34.35	27.40	1.104

# Oceanographic Station Data, M/V Pioneer

Station 27: 51°30'N., 172°39'W., 29 August 1957. Messenger time: 2027, GGT. Weather 02. Clouds: type 4, amt. 7. Wind: --°T, -- kts. Sea 3. Swell 1. Bar. 1013 mbs. Temp: dry 54.0°F, wet 52.0°F. BT 234.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	10.9	32.34	--		0	10.90	32.34	24.75	.000
10	10.32	32.36	.57		10	10.32	32.36	24.86	.032
25	9.18	32.48	.57		20	9.55	32.40	25.02	.062
49	4.44	32.83	.55		30	8.40	32.54	25.31	.090
79	4.26	33.19	.46		50	4.44	32.89	26.09	.136
108	4.45	33.49	.33		75	4.26	33.13	26.30	.182
138	4.5	33.74	.22		100	4.35	33.40	26.50	.223
167	4.54	33.86	.15		150	4.54	33.80	26.80	.294

Station 28: 51°30'N., 169°58'W., 30 August 1957. Messenger time: 1000 GGT. Weather 50. Clouds: type --, amt. 8. Wind: 270°T, 1 kt. Sea ---. Swell ---. Bar. 1012 mbs. Temp: dry 51.0°F, wet 49.5°F. BT 239.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	11.40	32.57	-		0	11.40	32.57	24.84	.000
10	11.24	32.56	.55		10	11.24	32.56	24.86	.031
25	10.86	32.60	.55		20	10.95	32.56	24.91	.062
50	4.48	32.86	.56		30	9.60	32.64	25.20	.091
80	3.73	33.09	.56		50	4.48	32.86	26.06	.138
110	4.12	33.66	.24		75	3.73	33.05	26.29	.184
140	4.2	33.78	.17		100	4.00	33.46	26.59	.225
169	4.20	33.89	.11		150	4.20	33.82	26.85	.292



Oceanographic Station Data, M/V Pioneer

Station 29: 51°30'N., 167°30'W., 30 August 1957. Messenger time: 2225 GCT. Weather 50. Clouds: type 4, amt. 7. Wind: 180°T, 5 kts. Sea 2. Swell 1. Bar 1010 mbs. Temp: dry 58.0°F, wet 54.0°F. BT 243.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/∞)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/∞)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	11.40	32.62	-		0	11.40	32.62	24.87	.000
10	10.86	32.62	.56		10	10.86	32.62	24.97	.030
25	10.50	32.60	.56		20	10.60	32.61	25.01	.060
49	5.62	32.79	.59		30	9.50	32.61	25.19	.089
79	4.24	32.90	.58		50	5.55	32.79	25.89	.138
108	3.92	33.39	.38		75	4.30	32.89	26.10	.189
138	3.93	33.67	.26		100	4.00	33.12	26.32	.234
167	3.88	33.81	.17		150	3.91	33.74	26.82	.309

Station 30: 52°30'N., 167°30'W., 31 August 1957. Messenger time: 0651 GCT. Weather 02. Clouds: type 6, amt. 8. Wind: 135°T, 5 kts. Sea 2. Swell 1. Bar 1007 mbs. Temp: dry 51.0°F, wet 49.5°F. BT 245.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/∞)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/∞)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	11.1	32.49	..		0	11.1	32.49	24.83	.000
10	10.85	32.49	.50		10	10.85	32.49	24.87	.031
25	10.58	32.49	.47		20	10.65	32.49	24.90	.062
50	4.51	32.92	.52		30	10.20	32.50	24.99	.092
--	4.26	33.01	.48		50	4.51	32.92	26.10	.141
80	4.21	33.27	.41		75	4.22	33.23	26.38	.186
110	4.42	33.64	.26		100	4.30	33.52	26.60	.225
140	4.39	33.87	.16		150	(4.34)	(33.91)	26.91	.290

Oceanographic Station Data, M/V Pioneer

Station 31: 55°00'N., 150°00'W., 7 September 1957. Messenger time: 0721, 0737 GCT. Weather 02. Clouds: type 4, amt. 2. Wind: 320°T, 5 kts. Sea 3. Swell 1. Bar. 1006 mbs. Temp: dry 55.0°F, wet 54.0°F. BT 251.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/∞)	C <sub>2</sub> ( $\frac{\mu\text{g}}{\text{at/L}}$ )	PO <sub>4</sub> -P ( $\frac{\mu\text{g}}{\text{at/L}}$ )	DEPTH (m)	T (°C)	S (°/∞)	$\sigma_t$ (g/L)	$\Delta D$ (dyn m)
0	12.9	32.78	-		0	12.9	32.78	24.72	.000
10	12.93	32.80	.52		10	12.93	32.80	24.73	.032
28	12.92	32.81	.52		20	12.93	32.80	24.73	.065
52	4.77	33.04	.55		30	12.92	32.81	24.73	.097
80	3.53	33.25	.46		50	6.10	33.00	25.98	.150
108	3.77	33.63	.26		75	3.55	33.21	25.43	.195
136	3.92	33.85	.11		100	3.68	33.48	25.63	.233
164	4.00	33.95	.06		150	4.97	33.90	25.83	.300

Station 32: 55°00'N., 140°00'W., 9 September 1957. Messenger time: 1954 GCT. Weather 40. Clouds: type 0, amt. 8. Wind: 140°T, 30 kts. Sea 5. Swell 1. Bar. 1019 mbs. Temp: dry 56.5°F, wet 55.5°F. BT 253.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/∞)	C <sub>2</sub> ( $\frac{\mu\text{g}}{\text{at/L}}$ )	PO <sub>4</sub> -P ( $\frac{\mu\text{g}}{\text{at/L}}$ )	DEPTH (m)	T (°C)	S (°/∞)	$\sigma_t$ (g/L)	$\Delta D$ (dyn m)
0	13.20	32.72	-		0	13.2	32.72	24.61	.000
14	12.77	32.72	.52		10	12.79	32.72	24.69	.033
29	12.74	32.72			20	12.75	32.72	24.70	.066
53	7.00	32.74	.57		30	12.74	32.72	24.70	.098
82	5.27	32.83	.55		50	8.05	32.73	25.51	.156
111	4.35	33.05	.51		75	5.60	32.80	25.89	.213
140	4.04	33.38	.53		100	4.61	32.94	26.11	.264
169	4.16	33.68	.27		150	4.06	33.50	26.61	.348

# Oceanographic Station Data, M/V Pioneer

Station 33: 55°00'N., 135°00'W., 11 September 1957. Messenger time: 0242 GCT. Weather 40. Clouds: type 0, amt. 8. Wind: 230°T, 10 kts. Sea 5. Swell 1. Bar. -- mbs. Temp: dry 59.0°F, wet 57.5°F. BT 254.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (‰)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (‰)	σ <sub>t</sub> (g/L)	ΔD (dyn m)
0	14.35	32.30	-	-	0	14.35	32.30	24.05	.000
19	14.19	32.28	-	-	10	14.34	32.29	24.05	.039
33	9.72	32.51	.55	-	20	14.10	32.28	24.09	.077
56	7.71	32.68	.45	-	30	10.80	32.46	24.86	.112
84	6.48	32.94	.43	-	50	8.10	32.63	25.42	.169
113	6.17	33.21	.43	-	75	6.73	32.85	25.79	.229
141	6.39	33.52	.34	-	100	6.23	33.08	26.03	.282
169	6.42	33.77	.30	-	150	6.40	33.60	26.42	.373



Summary of Observations at Bathymthermograph Lowerings, M/V Pioneer 1957  
(for coded values see H.O. Pub 606-C)

900' BT, Ser. No. 7851

Ser. No.	Time	Date	Latitude	Longitude	Bkt. Temp. °C	Wind Dir. °T	Wind Force kts.	Air Temp. Day °F	Air Temp. Wet Bulb °F	Bar. mb	Wear. Unit	Clouds	Vis Sea	Swell Dir.	Swell Amt.	Surf. Sct. 6/100
1	0215	5/25	53° 56' N	167° 25' W	6.5	19	5	42.0	42.5	97	02	6	7	6	2	1
2	0505	5/25	53 46	167 55	5.2	19	5	43.0	38.5	96	03	6	7	8	3	1
3	0802	5/25	53 34	168 32	4.7	18	5	40.5	38.0	96	01	4	1	8	3	1
4	1105	5/25	53 36	169 09	5.6	23	5	42.0	39.0	90	01	-	5	6	3	1
5	1405	5/25	53 14	169 48	5.2	05	5	42.0	40.0	98	03	6	7	7	3	1
6	1705	5/25	53 11	170 24	5.0	32	10	40.2	40.0	99	03	6	7	7	4	1
7	2003	5/25	53 04	170 58	4.9	32	10	46.0	42.0	01	03	6	9	7	4	1
8	2303	5/25	52 57	171 35	5.6	32	10	47.0	44.0	01	50	6	9	6	4	1
9	0200	5/26	52 53	172 16	4.7	32	10	49.0	45.0	05	01	6	7	7	4	1
10	0502	5/26	52 48	172 58	5.2	34	10	43.5	41.5	06	01	6	7	7	3	1
11	0802	5/26	52 43	173 35	4.6	34	5	42.0	41.0	08	03	6	9	7	3	1
12	1103	5/26	52 37	174 18	4.6	34	5	41.0	40.0	08	02	-	9	6	3	1
13	1405	5/26	52 32	174 57	4.5	36	5	41.0	39.5	09	50	6	9	6	2	1
14	1700	5/26	52 26	175 36	4.7	34	10	41.0	39.0	09	02	6	9	7	4	1
15	0500	5/31	51 30	177 14	5.7	16	5	43.5	42.5	07	10	0	9	4	4	1
16	0900	5/31	51 16	178 03	4.7	20	5	42.0	41.0	08	10	0	9	3	4	1
17	1703	5/31	51 03	178 54	4.0	20	10	41.5	40.0	08	01	6	7	8	4	1
18	2104	5/31	51 06	179 15	5.2	18	5	46.0	42.5	08	50	8	9	7	4	1
19	0100	6/1	51 05	178 22'E	5.7	16	15	43.0	41.0	08	30	8	9	7	5	2
20	0400	6/1	51 02	177 30	5.6	20	15	41.0	40.5	06	02	6	8	7	5	2
21	0900	6/1	51 01	176 34	5.6	23	10	41.0	40.0	06	02	6	8	6	4	1
22	1300	6/1	50 53	175 32	5.6	18	1	41.5	40.0	06	02	6	9	7	2	1
23	2200	6/1	50 29	175 07	6.0	14	1	49.0	45.0	06	01	8	7	7	2	1
24	0639	6/2	50 00	175 00	5.3	02	15	41.5	40.0	01	03	6	7	7	3	1
25	0200	6/10	50 00	175 00	5.3	36	5	42.5	41.0	12	50	6	9	7	2	0
26	0545	6/11	50 00	175 00	5.5	27	2	44.0	42.5	12	02	4	8	7	2	1
27	0550	6/12	50 00	175 00	6.7	32	1	47.0	44.5	12	03	8	7	7	2	1
28	0800	6/13	50 52	175 00	6.7	27	1	45.0	43.5	13	02	4	7	7	2	1
29	1100	6/13	51 20	175 00	6.4	05	1	44.5	43.5	14	02	-	8	7	2	1
30	1400	6/13	51 45	175 00	5.9	32	2	44.0	43.0	14	02	6	8	8	2	1

# Summary of Observations at Bathymograph Lowerings, M/V Pioneer 1957 (for coded values see H.O. Pub 606-C)

900' BT, Ser. No. 7851

Ser. No.	Time GCT	Date 1957	Latitude	Longitude	Dkt. Temp. °C	Wind		Air Temp		Bar. mbs	Wea-ther	Clouds		Vis	Sea	Swell	Surf. Sal. ‰	
						Dir. °T	Force kts.	Dry Bulb °F	Wet Bulb °F			Type	Amt.					Dir. °T
31	1715	6/13	52°12'N	175°03'E	5.4	05	1	43.5	43.5	14	02	6	7	7	2	32	1	33.10
32	2015	6/13	52°37	175°07	6.0	00	-	46.0	44.5	15	02	4	8	7	2	32	1	33.33
33	0025	6/14	53°00	175°00	6.6	23	3	46.5	46.0	16	02	4	8	7	2	20	1	33.25
34	0140	6/17	56°00	175°00	5.5	05	10	43.5	42.0	10	02	6	7	7	3	09	3	33.22
35	1110	6/19	55°29	174°58	5.4	05	7	41.5	40.5	20	02	4	8	6	4	05	1	33.16
36	1400	6/19	55°05	174°55	5.8	09	20	41.0	40.0	20	01	4	5	7	4	09	3	33.17
37	1700	6/19	54°41	174°53	5.5	36	10	41.0	40.5	20	03	4	8	6	3	36	3	33.40
38	2000	6/19	54°17	174°52	5.5	36	15	41.0	40.5	19	02	4	8	6	3	36	3	33.07
39	2300	6/19	53°54	174°50	5.4	02	10	43.5	41.5	19	02	4	8	6	4	02	3	33.14
40	0200	6/20	53°24	174°55	5.7	36	10	45.0	43.5	19	02	4	8	6	4	36	3	33.23
41	0650	6/20	53°00	175°00	5.7	36	5	42.5	41.5	18	02	4	8	6	4	36	3	33.08
42	0500	6/21	53°00	176°20	6.1	05	8	44.0	43.0	17	02	4	8	6	4	05	3	33.22
43	0800	6/21	53°00	177°00	5.7	02	10	42.5	41.5	16	02	4	8	6	3	02	1	33.37
44	1110	6/21	53°00	177°40	5.8	36	10	42.5	42.0	16	02	4	-	6	3	36	1	33.10
45	1400	6/21	53°00	178°13	5.7	05	7	41.5	41.0	16	10	0	8	3	3	05	1	33.19
46	1700	6/21	53°00	178°50	6.0	36	5	43.0	41.5	15	02	4	8	6	3	36	1	33.24
47	2000	6/21	53°00	179°27	6.3	05	10	44.5	43.0	15	02	4	8	6	3	05	1	33.36
48	2335	6/21	53°00	180°00	6.4	09	5	46.0	44.5	15	02	4	8	6	3	09	1	33.23
49	0500	6/23	53°06	179°22'W	5.8	07	15	48.0	45.0	10	02	8	8	6	5	07	3	33.23
50	0800	6/23	52°54	178°50	5.6	07	15	43.0	42.5	08	02	8	8	6	5	07	3	33.27
51	0520	6/28	52°05	176°22	6.3	05	1	47.0	46.0	17	02	4	8	7	1	32	1	33.14
52	0800	6/28	52°28	176°09	7.4	07	1	46.0	45.0	19	02	6	8	7	1	32	1	33.25
53	1105	6/28	52°52	176°06	7.0	05	1 1/2	45.0	44.0	19	02	-	8	6	2	32	1	33.22
54	1400	6/28	53°15	175°58	6.6	05	1	42.5	42.0	18	01	5	4	7	2	05	1	33.39
55	1700	6/28	53°39	175°49	6.6	00	0	46.0	44.0	19	03	4	8	6	2	32	1	33.19
56	2000	6/28	54°03	175°41	6.6	18	1	47.0	46.0	19	02	4	8	6	2	18	1	33.21
57	2300	6/28	54°28	175°32	6.9	00	0	49.0	48.0	19	02	4	8	6	2	18	1	33.21
58	0200	6/29	54°54	175°24	7.4	18	1	51.0	49.5	18	02	4	8	6	2	13	1	33.23
59	0500	6/29	55°19	175°15	7.1	16	1	48.0	47.0	18	02	4	8	6	2	25	1	33.11
60	0800	6/29	55°44	175°05	7.3	20	3	46.0	45.5	18	02	4	8	6	2	25	1	33.22



Summary of Observations at Bathymograph Lowerings, M/V Pioneer 1957  
(for coded values see H.O. Pub 606-C) (Cont.)

900' BT, Ser. No. 7851

Ser. No.	Time GCT	Date 1957	Latitude	Longitude	Bkt. Temp. °C	Wind		Air Temp		Ber. Wea. mbs	Clouds		Vis Sea	Swell		Surf. Sal. ‰	
						Dir. °T	Force kts.	Dry Bulb °F	Wet Bulb °F		Type	Amt. %		Dir. °T	Amt. %		
61	1000	6/29	56°00'N	175°00'W	7.6	18	1	45.0	44.5	18	02	-	6	2	32	1	32.92
62	0025	6/30	56 00	175 00	7.7	18	1	46.0	44.5	17	02	4	6	2	36	1	32.97
63	0500	7/2/	55 21	175 40	6.9	02	15	45.5	45.0	12	02	8	6	5	02	1	33.34
64	0800	7/2	54 57	175 32	7.1	34	15	45.0	44.5	12	02	4	6	5	34	1	33.22
65	1110	7/2	54 33	175 25	6.9	32	15	44.5	43.5	12	02	7	7	5	32	1	33.20
66	1400	7/2	54 08	175 19	6.7	32	15	44.5	43.0	14	02	7	7	4	32	1	33.13
67	1700	7/2	53 43	175 14	6.6	32	10	45.0	43.0	14	02	7	7	5	32	1	33.21
68	2000	7/2	53 20	175 06	6.7	29	15	47.5	45.0	15	02	7	7	5	32	1	33.21
69	2240	7/2	53 00	175 00	7.0	29	10	53.0	50.0	15	01	7	7	3	29	1	-
70	2400	7/4	52 34	175 00	7.0	23	10	45.5	44.0	15	50	0	6	4	23	1	33.15
71	0645	7/5	51 46	175 20	7.0	25	5	44.5	42.5	16	02	0	6	4	25	1	33.16
72	1000	7/5/	51 22	175 18	8.1	20	10	46.0	45.0	17	02	-	6	4	20	1	32.78
73	1300	7/5	50 50	175 15	7.5	23	15	45.0	44.5	17	02	-	5	5	23	1	33.03
74	1600	7/5	50 34	175 13	7.5	27	5	45.5	44.5	18	02	0	6	4	27	1	32.75
75	1900	7/5	50 11	175 10	7.9	27	5	50.0	56.0	19	02	0	7	3	27	1	32.82
76	2215	7/5	50 00	175 00	8.2	02	5	50.0	47.0	19	02	0	6	4	02	1	32.91
77	0500	7/7	50 00	175 00	8.3	11	13	47.0	45.5	13	02	0	6	3	11	1	32.91
78	2300	7/7	50 23	175 21	8.4	05	10	50.5	48.0	14	02	0	6	4	05	1	32.90
79	0300	7/8	50 44	175 34	8.5	05	10	51.0	49.0	14	01	0	6	4	05	1	32.85
80	0645	7/8	51 00	176 00	8.6	05	15	48.0	47.0	14	02	5	6	4	05	1	32.83
81	0500	7/14	52 21	177 21	7.7	34	5	47.5	47.0	15	02	0	7	2	34	1	33.26
82	0800	7/14	52 38	177 41	6.8	32	5	46.0	46.0	16	02	0	6	2	32	1	33.23
83	1105	7/14	52 55	178 11	7.1	32	1	47.0	46.0	16	02	-	4	2	-	-	33.24
84	1400	7/14	53 13	178 40	7.1	34	2	57.5	56.0	16	41	0	3	1	-	1	33.40
85	1700	7/14	53 30	179 09	7.4	29	1	57.0	56.0	16	43	0	4	2	29	1	33.37
86	2000	7/14	53 47	179 38	7.4	29	2	47.0	46.0	17	02	0	5	2	29	1	33.38
87	2300	7/14	54 05	179 52'E	7.6	23	2	51.0	48.5	17	02	4	7	2	23	1	33.40
88	0200	7/15	54 18	179 15	7.9	23	1	49.0	48.0	16	02	4	7	2	27	1	33.40
89	0500	7/15	54 32	178 39	7.8	23	2	48.5	47.5	16	47	0	6	2	23	1	33.12
90	0800	7/15	54 46	178 05	7.6	20	3	47.0	46.5	17	46	0	2	3	20	1	33.14



Summary of Observations at Bathymograph Lowerings, M/V Pioneer 1954  
(for coded values see H.O. Pub 606-C) (cont.)

900' BT, Ser. No. 7851

Ser. No.	Time	Date	Latitude	Longitude	Bkt. Temp. °C	Wind		Air Temp.		Bar. mbs	Wea-ther	Clouds	Vis	Sea	Swell	Dir. Amt.		Surf. Sal.
						Dir. °T	Force kts.	Bulb °F	Dry Bulb °F							Wet Bulb °F	Type	
91	1105	7/15	54°59'N	177°29'E	8.1	16	2	47.0	46.0	17	47	-	-	0	-	-	-	33.16
92	1400	7/15	55 12	176 55	8.5	34	3	47.0	46.0	17	42	0	8	2	34	1	-	-
93	1700	7/15	55 26	176 18	8.3	23	3	47.5	46.5	17	01	5	8	2	23	1	33.18	
94	2000	7/15	55 39	175 45	8.5	14	3	50.0	48.0	17	02	5	7	3	23	1	33.21	
95	2300	7/15	55 54	175 13	8.6	20	3	55.0	52.0	18	01	5	6	2	20	1	33.11	
96	0015	7/16	56 00	175 00	8.7	18	2	52.0	50.5	18	01	8	6	2	18	1	33.11	
97	0200	7/18	55 20	175 05	8.5	27	20	49.0	47.0	20	01	0	7	5	27	4	33.13	
98	0500	7/18	54 56	175 04	8.3	27	15	48.5	47.5	19	03	0	8	5	27	4	33.14	
99	0800	7/18	54 30	175 01	7.9	27	20	46.0	45.5	20	02	7	8	4	27	4	33.12	
100	1105	7/18	54 06	175 01	8.1	25	15	46.0	45.0	20	02	7	8	4	25	4	33.19	
101	1400	7/18	53 43	175 00	8.2	25	15	46.0	45.0	20	02	7	8	3	25	1	33.13	
102	1700	7/18	53 19	175 00	8.4	27	5	46.0	45.0	20	50	7	8	3	27	1	33.09	
103	0030	7/19	53 00	175 00	8.2	27	5	49.5	47.5	19	50	7	8	3	27	1	33.09	
104	0030	7/20	52 44	174 38	8.5	18	5	49.5	47.5	-	02	5	8	2	18	1	32.95	
105	0515	7/20	52 28	174 23	8.0	16	5	47.0	46.0	-	40	0	8	2	16	1	33.12	
106	0800	7/20	52 05	174 31	8.6	14	10	46.0	45.7	-	50	7	9	3	14	1	33.05	
107	1105	7/20	51 41	174 40	8.9	14	15	47.0	46.0	-	50	7	9	3	14	1	33.02	
108	1400	7/20	51 17	174 49	8.9	14	20	47.0	46.0	-	02	0	8	3	14	1	32.81	
109	1700	7/20	50 52	174 57	8.6	14	5	47.5	46.5	-	03	0	9	3	14	1	32.86	
110	2105	7/20	50 27	174 55	8.8	14	10	48.5	47.5	-	50	7	9	3	14	1	32.75	
111	2400	7/20	50 00	175 00	8.9	14	10	50.0	48.0	-	02	0	8	3	14	1	32.95	
112	2200	7/21	50 00	175 00	8.7	14	5	48.0	47.5	-	02	0	7	2	14	1	32.95	
113	2300	7/21	50 00	175 00	8.8	14	5	49.5	48.0	-	01	0	6	2	14	1	32.95	
114	2400	7/21	50 00	175 00	9.1	14	3	50.5	49.5	-	02	5	6	2	14	1	32.95	
115	0100	7/22	50 00	175 00	9.0	14	5	50.5	49.5	-	02	5	6	2	14	1	32.95	
116	0200	7/22	50 00	175 00	9.2	14	3	52.0	50.5	-	02	5	6	2	14	1	32.95	
117	0300	7/22	50 00	175 00	9.2	14	3	53.0	51.0	-	01	5	6	2	14	1	32.94	
118	0400	7/22	50 00	175 00	9.2	14	3	53.0	51.0	-	02	5	6	2	14	1	32.95	
119	0500	7/22	50 00	175 00	9.2	14	5	51.0	50.5	-	03	0	7	2	14	1	32.94	
120	2300	7/22	50 27	174 57	9.1	07	5	49.5	48.0	-	02	4	7	2	07	1	32.79	

Summary of Observations at Bathymograph Lowerings, M/V Pioneer 1957  
(for coded values see H.O. Pub 606-C) (cont.)

900' BT, Ser. No. 7851

Ser. No.	Time GCT	Date 1957	Latitude	Longitude	Bkt. Temp. °C	Wind		Air Temp	Bar. mbs	Wear ther	Clouds		Vis	Sea	Swell		Surf. Sal. ‰
						Dir. °T	Force kts.	Dry Bulb °F									
121	0200	7/23	50°52'N	174°57'E	9.0	36	1	54.0	-	02	4	6	6	2	36	1	32.99
122	0500	7/23	51 16	174 57	8.3	34	3	50.5	50.5	02	4	6	6	2	34	1	32.96
123	0815	7/23	51 40	175 00	9.0	36	5	49.0	49.0	50	7	9	4	2	36	1	33.04
124	1105	7/23	52 00	175 00	9.0	34	5	47.0	47.0	47	0	9	0	2	34	1	-
125	1700	7/23	52 00	175 00	9.1	34	3	49.0	48.0	40	0	8	4	2	34	1	33.04
126	2310	7/23	53 00	175 00	9.6	32	5	51.0	50.0	01	4	7	6	2	32	1	32.97
127	1930	7/24	53 00	175 00	9.4	32	15	48.5	47.5	02	7	7	6	3	32	1	32.97
128	2330	7/24	53 24	175 07	9.4	32	10	55.5	51.5	01	6	6	7	3	32	1	33.10
129	0230	7/25	53 49	175 04	9.7	32	5	59.5	54.5	02	6	8	7	3	32	1	33.09
130	0500	7/25	54 00	175 00	9.6	34	10	51.0	50.5	02	5	8	6	3	34	1	33.05
131	2300	7/25	54 25	174 58	9.7	09	3	52.0	50.0	02	5	8	7	2	09	1	33.11
132	0200	7/26	54 49	175 00	9.8	09	3	53.0	50.5	02	5	8	7	2	09	1	33.13
133	0420	7/26	55 00	175 00	9.8	18	5	51.5	50.0	02	5	8	6	2	18	1	33.10
134	2300	7/26	55 23	175 04	9.5	23	10	49.0	48.0	50	7	8	6	4	23	1	33.13
135	0200	7/27	55 46	175 02	9.7	25	17	49.5	48.0	02	5	6	6	4	25	1	33.12
136	0415	7/27	56 00	175 00	9.8	23	15	50.5	49.5	02	5	8	6	4	23	1	33.13
137	2130	7/27	56 00	175 00	9.7	16	15	50.5	49.0	02	5	8	6	4	16	1	33.13
138	2140	7/28	56 00	175 00	9.8	18	10	52.0	50.5	02	4	7	6	4	18	1	-
139	0200	7/29	55 19	175 00	9.8	18	10	50.5	49.5	01	4	7	6	3	18	1	33.11
140	0500	7/29	54 59	175 00	9.8	18	10	51.0	50.0	02	4	7	6	3	18	1	33.11
141	0800	7/29	54 35	175 00	9.8	18	10	49.5	-	02	4	7	6	3	18	1	33.12
142	1105	7/29	54 11	175 00	9.7	34	15	51.0	49.0	02	-	-	-	4	18	1	-
143	1500	7/29	53 47	175 00	9.6	14	10	49.0	48.0	01	-	6	5	3	14	1	33.07
144	1900	7/29	53 23	175 00	9.9	16	10	50.0	47.0	02	6	6	6	3	16	1	32.95
145	2300	7/29	53 00	175 00	10.0	18	5	55.0	53.0	01	4	3	7	2	18	1	33.00
146	0500	7/31	53 00	175 39	9.8	14	20	50.0	49.0	02	5	8	6	3	14	1	32.96
147	0800	7/31	52 57	176 15	9.9	11	10	48.5	48.0	02	5	8	6	4	11	1	33.04
148	1105	7/31	52 52	176 52	9.9	14	15	49.0	48.0	02	-	-	-	4	16	1	33.04
149	1400	7/31	52 48	177 27	9.5	09	10	48.0	47.0	02	-	-	-	2	09	1	33.10
150	1700	7/31	52 43	178 04	9.3	09	10	48.0	46.0	01	4	7	6	3	09	1	33.10



Summary of Observations at Bathymograph Lowerings, M/V Pioneer 1957  
(for coded values see H.O. Pub. 606-C) (Continued)

900' BT, Ser. No. 7851

Ser. No.	Time GCT	Date 1957	Latitude	Longitude	Ect. Temp. °C	Wind		Bar. mbs	Wear ther	Clouds	Vis Sea		Dir. Amt. 8/100	Surf. Sal.
						Dir. °T	Force kts.							
151	2000	7/31	52°40'N	178°39'E	9.4	09	5	17	02	4	7	6	09	1
152	2300	7/31	52 35	179 15	9.6	09	5	19	01	4	6	7	09	1
153	0530	8/1	52 26	179°31'W	8.8	09	10	18	02	6	6	7	09	1
154	0800	8/1	52 22	178 56	7.8	09	10	18	03	4	7	6	09	1
155	1105	8/1	52 18	178 19	6.7	07	10	18	02	-	-	-	07	1
156	1400	8/1	52 13	177 41	8.8	14	15	18	02	-	-	-	-	-
157	1700	8/1	52 09	177 06	7.3	07	10	18	02	5	9	5	07	1
158	1105	8/6	51 22	177 00	9.9	23	1	19	02	-	-	-	23	1
159	1400	8/6	51 14	177 36	10.1	25	1	20	02	-	-	-	20	1
160	1700	8/6	51 06	178 15	9.9	16	2	20	02	4	7	6	16	1
161	2000	8/6	50 58	178 52	9.2	20	1	-	02	4	7	6	20	1
162	2300	8/6	50 55	179 34	10.2	18	1	-	01	8	6	6	18	1
163	0200	8/7	50 55	179°43'E	10.6	18	3	-	02	8	6	6	18	1
164	0500	8/7	50 55	179 02	9.9	18	5	-	03	6	7	6	18	1
165	0800	8/7	50 55	178 24	9.9	23	1	-	02	6	7	5	20	1
166	1105	8/7	50 55	177 44	9.8	18	2	-	50	-	-	-	18	1
167	1400	8/7	50 55	177 06	9.9	18	3	-	02	-	-	-	18	1
168	1700	8/7	50 55	176 27	9.5	18	3	-	02	6	7	6	18	1
169	2000	8/7	50 55	175 45	9.5	18	5	-	02	4	7	6	18	1
170	0130	8/8	50 26	175 14	9.8	18	7	-	47	0	9	2	18	1
171	0520	8/8	50 00	175 00	9.5	18	5	-	47	0	9	1	18	1
172	0725	8/8	50 00	175 00	9.5	18	8	20	45	0	9	2	18	1
173	0320	8/9	50 00	175 00	9.8	18	18	-	50	0	9	3	20	1
174	2200	8/9	50 28	175 04	9.6	18	9	18	50	7	8	5	18	1
175	0100	8/10	50 53	175 01	9.7	18	15	17	50	7	8	5	18	1
176	0400	8/10	51 18	175 00	9.5	18	25	16	50	7	8	5	18	1
177	0700	8/10	51 41	175 00	8.8	18	20	15	50	7	8	5	18	1
178	0525	8/11	53 00	175 00	8.8	18	5	10	44	0	8	5	16	1
179	0735	8/11	53 00	175 00	8.7	18	10	09	44	0	8	4	16	1
180	2230	8/11	53 00	175 00	9.2	36	7	08	02	5	7	6	36	1



Summary of Observations at Bathymograph Lowerings, M/V Pioneer 1957  
(for coded values see H.O. Pub. 606-C) (Continued)

900' BT, Ser. No. 7851

Ser. No.	Time GCT	Date 1957	Latitude	Longitude	Bkt. Temp. °C	Wind		Bar. mbs	Weather	Clouds		Vis Sea	Swell		Surf. Sal. ‰
						Dir. °T	Force kts.			Type	Amt.		Dir. °T	Amt.	
181	2330	8/11	53°00'N	175°00'E	9.4	36	10	08	01	2	7	6	36	1	32.99
182	0030	8/12	53 00	175 00	9.3	02	5	08	02	5	7	6	02	1	33.00
183	0130	8/12	53 00	175 00	9.4	36	5	08	40	0	8	5	36	1	32.97
184	0230	8/12	53 00	175 00	9.4	36	7	08	01	4	7	6	36	1	33.00
185	0330	8/12	53 00	175 00	9.5	36	5	08	02	6	7	6	36	1	33.00
186	0430	8/12	53 00	175 00	9.4	36	7	08	02	6	7	6	36	1	33.00
187	0530	8/12	53 00	175 00	9.3	36	5	08	02	5	7	6	36	1	33.01
188	2315	8/12	53 25	175 00	10.3	11	2	05	02	5	7	6	11	1	32.86
189	0200	8/13	53 44	175 00	10.1	11	3	04	50	0	9	4	11	1	32.93
190	0500	8/13	54 08	175 00	10.3	11	10	04	50	0	9	2	09	1	32.90
191	0800	8/13	54 30	175 00	10.0	09	10	03	50	0	9	2	09	1	33.12
192	2015	8/13	54 36	175 00	10.1	18	15	01	02	8	7	6	18	1	33.12
193	0215	8/14	54 56	175 00	10.7	18	10	01	02	8	7	6	18	1	33.10
194	0500	8/14	55 20	175 00	10.7	18	10	01	02	4	7	6	18	1	33.07
195	0800	8/14	55 43	175 00	10.6	16	10	01	02	8	7	6	18	1	33.06
196	1000	8/14	56 00	175 00	10.6	18	10	01	50	8	8	7	-	-	33.08
197	2330	8/14	56 00	175 00	10.9	32	10	03	02	6,7	6	7	32	1	33.08
198	0215	8/15	56 00	175 00	10.8	27	25	05	03	6	8	6	27	1	33.08
199	2000	8/15	54 31	174 41	9.8	27	20	15	02	1	1	7	27	1	33.14
200	2300	8/15	54 07	174 40	10.7	23	20	15	02	4	7	7	27	1	32.95
201	0200	8/16	53 46	174 54	9.7	23	30	16	02	4	7	7	23	1	32.97
202	0545	8/16	53 26	174 54	10.2	23	25	18	02	4	8	7	23	1	32.93
203	2215	8/16	53 00	175 00	9.8	32	2	-	02	6	8	6	32	1	33.03
204	0200	8/17	53 00	175 00	10.0	32	3	-	02	6	8	6	32	1	33.02
205	2300	8/18	52 27	174 57	10.2	18	5	19	02	6	8	6	18	1	32.88
206	0200	8/19	52 03	175 00	10.6	23	5	19	02	4	8	6	23	1	32.97
207	0650	8/19	51 30	175 00	9.6	25	3	19	02	4	8	6	25	1	32.88
208	0915	8/19	51 30	175 00	9.6	23	3	20	02	-	8	-	-	-	32.91
209	2320	8/19	51 03	174 50	10.7	23	1	19	02	4	8	6	23	1	32.73
210	0200	8/20	50 40	174 53	10.8	23	5	19	02	4	8	7	23	1	32.78

Summary of Observations at Bathymthermograph Lowerings, M/V Pioneer 1957  
(for coded values see H.O. Pub. 606-C) (continued)

900' BT, Ser. No. 7851

Ser No.	Time GMT	Date 1957	Latitude	Longitude	Bkt. Temp. °C	Wind		Air Temp		Bar. mbs	Wee-ther	Type Amt.		Dir. Ant. Sal.	Surf o/oo
						Dir. °T	Force kts.	Dry Bulb °F	Wet Bulb °F						
211	0500	8/20	50°16' N.	174°55' E	10.7	20	5	54.0	52.0	18	01	8	7	7	32.63
212	0800	8/20	50 00	175 00	10.5	20	10	51.0	50.0	19	03	4	8	6	32.66
213	0430	8/23	51 30	175 00	8.9	18	10	50.5	49.5	06	02	6	8	6	32.91
214	0725	8/23	51 30	175 00	8.9	18	10	50.0	49.0	07	02	4	8	5	32.90
215	2400	8/23	51 52	175 00	10.5	23	10	54.0	52.0	06	02	6	8	6	32.91
216	0300	8/24	52 15	175 00	9.5	23	10	54.0	51.0	05	02	6	8	6	32.99
217	0600	8/24	52 35	175 00	9.5	18	1	51.5	50.0	04	02	6	8	6	33.12
218	0820	8/24	53 00	175 00	9.8	18	1	50.0	49.0	04	02	-	8	-	33.06
219	2300	8/24	52 56	175 40	9.8	34	10	50.5	49.0	01	01	4	7	6	33.07
220	0200	8/25	52 52	176 21	9.4	34	10	51.0	49.5	00	02	4	7	6	33.05
221	0500	8/25	52 47	177 01	9.1	32	10	50.0	49.0	99	50	7	8	6	32.97
222	0600	8/25	52 42	177 40	9.4	32	10	50.0	49.0	98	02	4	8	6	32.97
223	1105	8/25	52 38	178 20	10.4	32	10	50.0	49.0	97	02	-	6	-	32.89
224	1400	8/25	52 33	178 59	9.8	27	10	50.0	48.0	96	-	-	-	-	33.07
225	2300	8/25	52 19	178 59	8.6	25	15	50.5	48.0	93	02	6	7	6	33.12
226	0200	8/26	52 15	178 20	7.3	25	15	51.0	48.5	92	02	4	8	6	33.12
227	0500	8/26	52 12	177 39	9.0	25	15	50.0	48.5	91	02	6	8	6	33.09
228	0800	8/26	52 08	176 55	7.2	25	15	47.0	46.0	91	02	-	8	-	33.15
229	0500	8/29	51 30	175 38	10.8	16	7	52.5	52.0	13	02	4,6	8	6	32.49
230	0800	8/29	51 30	175 02	7.3	18	2	48.5	48.0	13	02	-	8	-	33.04
231	1105	8/29	51 30	174 27	11.6	16	3	49.0	48.0	13	02	-	8	-	32.50
232	1400	8/29	51 30	173 59	10.0	23	5	50.0	46.0	13	02	-	-	-	32.38
233	1700	8/29	51 30	173 13	10.5	07	1	51.0	50.0	13	01	4,6	7	6	32.33
234	2000	8/29	51 30	172 39	10.9	-	-	54.0	52.0	13	02	4	7	6	32.34
235	2300	8/29	51 30	172 09	12.4	05	1	58.0	55.5	13	03	4,9	8	6	32.41
236	0200	8/30	51 30	171 34	11.9	27	4	68.0	66.0	13	02	6	8	6	32.53
237	0500	8/30	51 30	170 56	11.7	05	1	52.5	52.0	12	50	4,7	8	6	32.56
238	0800	8/30	51 30	170 18	11.7	-	-	52.0	51.5	12	02	-	8	-	32.55
239	0930	8/30	51 30	169 58	11.4	27	1	51.0	49.5	12	50	-	8	-	32.57
240	1400	8/31	51 30	169 12	11.4	27	5	50.0	50.0	12	02	-	8	-	32.61

Summary of Observations at Bathymograph Lowerings, M/V Pioneer 1957  
(for coded values see H.O. Pub. 606-C) (Continued)

900° BT, Ser. No. 7857

Ser. No.	Time GCT	Date 1957	Latitude	Longitude	Brt. Temp. °C	Wind		Air Temp.		Bar. mbs	Wes-ther		Type	Amt.	Vis		Dir.	Amt.	Sal. ‰
						Dir.	Force	Dry Bulb	Wet Bulb		ther	ther			Sea	Sea			
						°T	kts	°F	°F								°T		
241	1700	8/30	51°30'N.	168°33'W.	11.0	23	3	51.0	50.0	11	02	4	8	6	6	2	18	1	32.60
242	2000	8/30	51°30'	167°54'	11.0	23	2	55.5	52.0	11	02	4,9	8	6	6	2	12	1	32.65
243	2200	8/30	51°30'	167°30'	11.4	18	5	58.0	54.0	13	01	4,9	7	6	6	2	18	1	32.62
244	0200	8/31	51°56'	167°30'	11.4	23	10	54.0	51.0	08	50	6	8	6	6	3	32	1	32.57
245	0630	8/31	52°30'	167°30'	11.0	14	5	51.0	49.5	07	02	6	8	5	5	2	14	1	32.44
246	1105	8/31	52°42'	166°41'	10.7	14	10	51.0	49.5	05	02	-	8	-	-	-	-	-	32.43
247	1400	8/31	52°51'	166°04'	11.2	11	10	50.0	49.0	02	-	-	-	-	-	-	-	-	32.55
248	1700	8/31	53°00'	165°26'	11.1	09	10	51.0	50.0	00	50	6	8	6	6	3	09	1	32.54
249	2000	8/31	53°09'	164°49'	11.3	09	10	50.0	49.0	99	50	7	8	6	6	3	09	1	32.58
250	2315	9/4	55°09'	156°49'	12.5	36	10	55.0	54.0	97	02	5	7	6	6	4	07	1	32.44
251	0500	9/7	55°00'	150°00'	12.9	32	5	55.0	54.0	06	02	4	2	5	5	3	32	1	32.78
252	2020	9/8	55°00'	145°00'	13.2	18	20	56.0	55.0	13	40	0	8	5	5	5	18	1	32.09
253	0330	9/10	55°00'	140°00'	13.2	14	20	56.5	55.5	19	40	0	0	5	5	5	14	1	22.46
254	0210	9/11	55°00'	135°00'	14.3	23	10	59.0	57.5	-	40	0	0	8	5	5	23	1	32.44



Plankton Data, M/V Pioneer Numbers of Organisms per Cubic Meter of Water

STATION	DATE/HOUR (GCT)	DEPTH INTERVAL (m)	DISPLACEMENT VOLUME	MEDUSAE	SIPHONOPHORE	CHAETOGNATHA	GASTROPODA	COPEPODA	EUPHAUSIACEA	AMPHIPODA	OSTRACODA	Crustacean larvae	TUNICATA	Miscellaneous	Total
1	2/07	100-0 300-100 300-0	9.3 3.0 6.7			t 3.1 1.1	t	33.0 33.9 20.8	t t t	t t t	2.4 1.8 2.7			t	35.4 38.8 24.6
2	10/06	70-0 300-70 300-0	0.8 3.4 7.7			2.3 2.3 10.1	t t	51.3 7.7 34.2	t t	1.2 t	3.5 2.7 2.7			4.7 t 2.4	63.0 12.7 50.8
3	14/03	25-0 300-25 300-0	* 11.0 *	19.6 t 5.4		6.5 17.4	6.5	339.6 34.2 62.6	3.3 t 1.1	6.5	26.1 t 3.3			173.1 1.5 13.1	581.2 35.7 102.9
4	17/02	31-0 300-31 300-0	0.9 3.5 3.0	7.9 t 1.1		23.6 3.2 t	2.6 t t	550.7 9.4 31.8		5.2 t t	7.9 t 1.1			44.6 1.5 2.7	642.5 14.1 36.7
5	22/02	50-0 300-50 300-0	* 5.8 *	32.7 3.3 1.1		98.0 8.5 9.3		2840.8 111.1 163.2	13.1	32.7	84.9 22.9 6.0	130.6 3.3 1.6		65.3 13.1 47.3	3298.1 163.5 229.6
7	3/02	40-0 300-40 300-0	5.4 3.3 9.3	41.0 3.8 2.2	16.4	41.0 36.4 12.0	8.2 1.3 2.2	2264.5 258.4 281.9	8.2 4.4	24.6 2.5 5.4	24.6 3.8 4.4			65.6 7.5 13.1	2494.1 313.7 325.6
8	6/00	49-0 300-49 300-0	1.1 2.2 5.3	53.3 5.2 4.4	26.7 2.6 4.4	40.0 44.2 34.8	13.3 2.6	3906.6 182.1 178.6	26.7 2.6 4.4	13.3 2.6 6.5	53.3 18.2 13.1	13.3		133.3 26.0 8.7	4279.8 286.1 254.9
10	16/04	93-0 300-93 300-0	5.3 2.4 6.5	14.1 6.3 4.4		56.3 51.3 10.9	14.1 3.2 4.4	1877.9 413.1 452.9	14.1 6.3 6.5	14.1 3.2 2.2	28.1 15.8 4.4	56.3 3.2		63.3 28.4 6.5	2138.3 534.0 494.4

# Plankton Data, M/V Pioneer

Numbers of Organisms per Cubic Meter of Water

STATION	DATE/HOUR (GCT)	DEPTH INTERVAL (m)	DISPLACEMENT VOLUME	MEDUSAE	SIPHONOPHORES	CHAETOGNATHA	GASTROPODA	COPEPODA	EUPHAUSIACEA	AMPHIPODA	OSTRACODA	Crustacean larvae	TUNICATA	Miscellaneous	Total
11	19/05	93-0 300-93 300-0	* 7.3 *	10.5 3.2 4.4	3.5 1.6	7.0 17.3 58.8	2.2	1582.3 259.8 846.8	10.5 4.7 2.2	3.5	7.0 15.8 23.3	102.0 7.9 10.9	35.2 1.6 4.4	24.6 17.3 91.4	1786.1 329.2 1051.6
12	21/07	120-0 300-120 300-0	6.8 5.2 4.8	5.4 14.5 2.2	2.7 14.5 2.2	10.9 61.6 28.3	2.7 3.6 2.2	852.3 424.2 230.7	3.6 8.7	43.6 7.3 8.7	13.6 58.0 26.1			10.9 29.0 15.2	942.1 616.3 324.3
13	23/19	100-0	4.2	3.3		16.3		2605.7	6.5	3.3		19.6	6.5	39.2	2700.4
14	24/20	104-0 300-104 300-0	10.1 4.7 11.9	3.1 1.7 6.5	3.1 3.3 2.2	9.4 11.7 6.5	3.1 2.2	1625.0 231.6 986.1	3.1 6.5	3.1 5.0 4.4	6.3 10.0 8.7	56.5 3.3 34.8	3.3	31.4 3.3 58.8	1744.1 273.2 1116.7
15	25/20	104-0 300-104 300-0	5.0 3.8 13.0	9.4 5.0	6.3 1.7	25.1 46.7 22.9	3.1	2362.2 205.6 871.8	3.1 1.7 2.2	6.3 6.7	3.1 8.3 10.9	18.8 8.7	5.3	62.7 25.0 27.2	2500.1 300.7 944.8
16	26/07	61-0 300-61 300-0	10.9 2.4 12.2	8.0 2.1 2.2	10.7 26.0 1.1	10.7 26.0 64.2		1530.6 153.9 947.1	5.3 2.1 3.3	2.7 1.4 2.2		133.3 8.7	5.3 1.1	10.7 8.9 27.2	1706.6 198.5 1063.6
17	27/24	104-0 300-104 300-0	10.4 4.7 10.0	3.1 2.2	12.5 8.3 1.1	18.8 15.0 15.2	3.1 1.7 2.2	2359.3 233.2 325.4	6.3 1.7 2.2	3.1 1.7 3.3	6.3 13.3 10.9	131.8 1.7 15.2		40.8 21.7 7.6	2585.1 298.3 386.4
18	30/03	123-0 300-123 300-0	13.7 5.5 18.3	2.7 7.4 4.4	1.3	5.3 36.9 28.3	6.6 3.7 2.2	1550.8 335.8 487.7	2.7 7.4 2.2	8.0 3.7 6.5	5.3 18.4 6.5	35.9 2.2	8.0 11.1	22.6 29.5 15.2	1649.2 453.9 555.2

Plankton Data, M/V Pioneer Numbers of Organisms per Cubic Meter of Water

STATION	DATE/HOUR	DEPTH INTERVAL (m)	DISPLACEMENT VOLUME	MEDUSAE	SIPHONOPHORE	CHAETOGNATHA	GASTROPODA	COPEPODA	EUPHAUSIACEA	AMPHIPODA	OSTRACODA	Crustacean larvae	TUNICATA	Miscellaneous	Total
19	8/08	76-0	2.7		4.3	21.5		2718.9	8.6	4.3	4.3	38.7	8.6	8.6	2718.8
		300-76	3.4	1.5		68.5		90.4	2.9	7.3	4.4	5.8		24.8	205.6
		300-0	8.7	14.1	1.1	28.3		1187.6	1.1	1.1	2.2	65.3	17.4	56.6	1374.8
20	11/23	71-0	1.8	13.8	4.6	32.2	32.2	2619.8	13.8	4.6	23.0			138.1	2882.1
		300-71	11.1	4.3	2.9	29.9	10.0	571.6	4.3	10.0	7.1			34.2	674.3
		300-0	11.0	2.2	1.1	16.3	1.1	680.4	1.1	10.9	7.6	2.2		59.9	782.8
23	17/03	100-0	2.9	3.3	3.3	29.4		1887.3	16.3	6.5	3.3		6.5	163.3	2119.2
		300-100	2.7	4.9	4.9	21.2	1.6	520.9	1.6	3.3	6.5			11.4	576.3
		300-0	10.0	5.4	1.1	23.9	1.1	550.8	2.2	5.4	7.6			19.6	617.1
25	23/08	50-0	2.9	6.5		84.9	6.5	3102.0	6.5	209.0		19.6	39.2	222.0	3696.2
		300-50	5.6	2.6	6.5	19.6	1.3	368.5	7.8	13.1	9.1			26.1	454.6
		300-0	8.4		2.2	9.8		481.2	4.4	35.9	2.2		1.1	16.3	553.1



# Plankton Data, M/V Pioneer

## Numbers of Copepods per Cubic Meter of Water

STATION	DEPTH INTERVAL (m)	Acartia	Calanus crystallinus	Calanus finmarchicus	Calanus plumchrus	Gandacia	Eucalanus bungii	Euchaeta japonica	Gaeranus	Haloptilus	Heterorhabdus	Metridia lucens	Oithona	Pleuromma	Pseudocalanus minutus	Miscellaneous
1	100-0		t		t		20.0	t	t		t	1.6	1.6	2.0	4.1	3.7
	300-100						13.1		t			14.3	t	t	4.1	2.4
	300-0		2.4		t		6.8	t	t		t	t	5.4	t	2.7	3.5
2	70-0				9.3		5.8		1.2			3.5	12.8	1.2	11.7	5.8
	300-70		t		t		4.3		t	t	t	1.8	t	t	1.6	
	300-0		t				t				t	2.4	19.0		8.2	4.6
3	25-0				3.3		6.5	19.6				19.6	195.9	3.3	42.4	49.0
	300-25		t		t		1.8	1.8				3.9	16.3		7.4	3.0
	300-0		1.6		1.1		2.2		1.6		t	7.1	41.9	1.1	1.6	4.4
4	31-0				23.6		81.3		2.6				414.4		13.1	15.7
	300-31		t				2.7	t				t	2.9		2.0	1.8
	300-0		t		1.1		1.9					1.4	19.0		5.4	3.0
5	50-0				163.3		476.7						966.5		666.1	568.2
	300-50				17.0		8.5					11.8	26.1		9.8	37.9
	300-0		1.1	1.6	4.9	t	25.0	t				2.7	95.2		14.7	18.0
7	40-0			16.4	828.7		205.1						787.7		361.0	65.6
	300-40				16.3		74.0						99.1		33.9	35.1
	300-0		4.4		90.3		38.1						75.1		30.5	43.5
8	49-0			13.3	160.0		106.7		13.3	2.6			3240.0		320.0	53.3
	300-49				15.6		26.0					2.6	80.7		33.8	20.8
	300-0		4.4	4.4	19.6		17.4	2.2			2.2	13.1	102.3		10.9	6.5
10	93-0		21.1	21.1	119.6		274.3					21.1	1364.4		21.1	56.3
	300-93				6.3		119.8	3.2				47.3	198.6		9.5	28.4
	300-0		2.2	2.2	6.5		117.6					4.4	291.7		2.2	28.3

Plankton Data, M/V Pioneer Numbers of Copepods per Cubic Meter of Water

STATION	DEPTH INTERVAL (m)	Acartia	Calanus cristatus	Calanus finmarchicus	Calanus plumchrus	Candacia	Bucalanus bungii	Euchaeta japonica	Gaetanus	Beloptilus	Heterorhabdus	Metridia lucens	Oithona	Pleuromma lineatum	Pseudocalanus minutus	Miscellaneous
11	93-0		7.0	3.5	59.8		263.7					14.1	851.0		351.6	31.6
	300-93		7.9		1.6	1.6	45.7	57.1				33.1	45.7		47.3	19.8
	300-0			4.4	37.0		139.3	2.2	2.2			56.6	391.8	2.2	176.3	34.8
12	120-0				5.4	2.7	10.9	2.7				5.4	770.7		35.4	19.1
	300-120		14.5		29.0		54.4				3.6	76.1	94.3		65.3	83.4
	300-0		6.5	6.5	17.4	6.5	37.0		3.6			28.3	87.1		21.8	17.4
13	100-0	55.5			192.7		306.9						1459.6		470.2	120.8
14	104-0				379.6		28.2					40.8	1123.1		25.1	28.2
	300-104		5.0	5.0	40.0	5.0	55.0	11.7				45.0	43.3		3.3	18.3
	300-0		4.4		250.3	8.7	23.9	4.4				30.5	598.6			65.3
15	104-0		3.1	3.1	34.5		624.3					3.1	1587.5		62.7	43.9
	300-104				1.7		210.0		3.3			26.3	78.3		61.7	13.3
	300-0		3.3		25.0	1.1	309.1	1.1				13.1	413.6		80.5	25.0
16	61-0	16.0	8.0	21.3	170.7		192.0					5.3	757.3		197.3	162.7
	300-61				2.1		50.6					8.9	71.1		18.5	2.7
	300-0		2.2		56.6		125.2	3.3				13.1	549.7		135.0	62.0
17	104-0				351.4		191.4					62.8	1640.8		69.0	43.9
	300-104			3.3	10.0		43.3					13.3	70.0		40.0	53.3
	300-0				28.3		45.7	1.1				16.3	197.0		5.4	31.6
18	123-0	1.3			81.0		297.4					49.1	952.0		103.6	66.4
	300-123						114.4					3.7	162.3		11.1	44.3
	300-0		2.2		19.6		156.7	2.2				13.1	263.4		13.1	17.4

Plankton Data, M/V Pioneer

Numbers of Copepoda per Cubic Meter of Water

STATION	DEPTH INTERVAL (m)	Acartia	Calanus cristatus	Calanus finmarchicus	Calanus plumchrus	Candacia	Eucalanus bungii	Euchaeta japonica	Gaetanus	Haloptilus	Heterorhabdus	Metridia lucens	Oithona	Pleuromma	Pseudocalanus minutus	Miscellaneous
19	76-0				38.7		21.5					4.3	2560.0		47.2	47.2
	300-76		4.4		2.9		13.1				1.5	2.9	43.7	1.5	4.4	16.0
	300-0				12.0		8.7					4.4	1062.3		30.5	69.7
20	71-0				36.8		142.7					18.4	2095.0		276.3	50.6
	300-71			4.3	11.4		166.8	1.4				159.6	71.3		96.9	59.9
	300-0		3.3		9.8		187.2	1.1				145.9	272.1		56.6	4.4
23	100-0		3.3		55.5		199.2					62.0	1247.3		186.1	133.9
	300-100			1.6	8.2		114.3					53.9	298.8		22.9	21.2
	300-0		3.3	4.4	7.6		105.6					35.9	315.6		56.6	21.8
25	50-0	19.6			39.2		58.8		6.5			646.5	1619.6		626.9	84.9
	300-50				11.8		53.6		2.6		2.6	182.9	18.3		56.2	40.5
	300-0	22.9			4.4		26.1		2.6		1.1	126.3	244.9		38.1	17.4



**TABULATED DATA, M/V Paragon**

**Station Data**

**Bathythermograph Data**

**Plankton Data**

# Oceanographic Station Data, M/V Paragon

Station 1: 50°00'N., 175°00'W., 21 July 1957. Messenger time: 0900, 1040 GCT. Weather 01. Clouds: type 8, amt. 2. Wind: 340°T, 3 kts. Sea 1. Swell 1. Bar. 1012 mbs. Temp: dry 55.0°F, Wet 52.0°F. BT 37.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/∞)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/∞)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	9.8	32.83			0	9.8	32.83	25.31	.000
10	8.90	32.85			10	8.90	32.85	25.47	.026
20	8.48	32.86	.55		20	8.48	32.86	25.55	.051
40	5.94	32.94			30	7.15	32.89	25.76	.074
65	5.07	32.96	.55		50	5.45	32.95	26.02	.117
90	4.35	33.12			75	4.75	33.00	26.14	.165
115	4.10	33.44	.46		100	4.20	33.27	26.42	.209
142	3.96	-	.25						
492	3.44	34.20	.08						
792	3.01	34.35							

Station 2: 53°00'N., 175°00'W., 24 July 1957. Messenger time: 0415, 0617 GCT. Weather 47. Clouds: type -, amt. 9. Wind: 230°T, 9 kts. Sea 3. Swell 2. Bar. 1022 mbs. Temp: dry 47.0°F, wet 46.0°F. BT 52.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/∞)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/∞)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	8.6	33.08			0	8.6	33.08	25.70	.000
10	8.00	33.06			10	8.00	33.06	25.77	.023
20	7.50	33.06	.58		20	7.50	33.06	25.85	.045
30	5.29	33.20			30	5.29	33.20	26.24	.064
50	4.44	33.29	.49		50	4.44	33.28	26.40	.099
75	4.34	33.35			75	4.34	33.35	26.46	.139
100	4.16	33.40	.41		100	4.16	33.40	26.52	.178
142	4.11	33.46			150	(4.10)	(33.46)	26.58	.253

# Oceanographic Station Data, M/V Paragon

Station 3: 56°00'N., 175°00'W., 27 July 1957. Messenger time: 0510, 0610 GCT. Weather 01. Clouds: type 9, amt. 7. Wind: 270°T, 5 kts. Sea 2. Swell 2. Bar. 1021 mbs. Temp: dry 49.0°F, wet 47.0°F. BT 64.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/∞)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/∞)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	9.3	33.02			0	9.3	33.02	25.54	.000
10	9.42	32.99			10	9.42	32.99	25.50	.025
20	9.26	32.98			20	9.26	32.98	25.52	.050
30	7.62	33.04			30	7.62	33.04	25.81	.073
50	4.14	-			50	4.14	33.17	26.34	.112
75	3.67	-			75	3.67	33.22	26.43	.153
100	3.43	33.25			100	3.43	33.25	26.47	.193
125	3.32	33.28	.49		150	3.09	33.30	26.54	.270
(146)	3.09	33.29	.54		200	3.72	33.49	26.64	.344
273	3.76	33.76			250	3.75	33.69	26.79	.411
(443)	3.37	34.00	.13		300	3.74	33.80	26.88	.473
698	3.24	34.22			400	3.55	33.94	27.01	.588
1095	2.59	34.43	.05		500	3.38	34.05	27.11	.692
					600	3.39	34.14	27.19	.788
					700	3.24	34.22	27.26	.878
					800	3.08	34.27	27.32	.962
					1000	2.75	34.39	27.44	1.115

Station 4: 53°00'N., 175°00'W., 30 July 1957. Messenger time: 0600, 0722 GCT. Weather 03. Clouds: type 7, amt. 9. Wind: 090°T, 5 kts. Sea 1. Swell 1. Bar. 1025 mbs. Temp: dry 49.0°F, wet 47.0°F. BT 76.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/∞)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/∞)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	9.2	33.08			0	9.2	33.08	25.61	.000
10	9.10	33.06			10	9.10	33.06	25.61	.024
20	9.05	33.07			20	9.05	33.07	25.62	.048
30	8.06	33.06			30	8.06	33.06	25.76	.071
50	5.32	33.23			50	5.32	33.23	26.26	.111
75	4.39	33.35			75	4.39	33.35	26.46	.153
100	4.15	33.43			100	4.15	33.43	26.54	.192
125	4.12	33.50			150	4.03	33.56	26.66	.264
147	4.03	33.56							
570	3.42	34.13							
831	3.12	34.24							



# Oceanographic Station Data, M/V Paragon

Station 5: 51°30'N., 175°00'W., 6 August 1957. Messenger time: 1751, 1920 GCT. Weather 03. Clouds: type 1, amt. 9. Wind: 270°T, 5 kts. Sea 1. Swell 2. Bar. 1023 mbs. Temp: dry 50.5°F, wet 49.0°F. BT 88.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/∞)	O <sub>2</sub> (mg-at/L)	PO <sub>4</sub> -P (μg-at/L)	DEPTH (m)	T (°C)	S (°/∞)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	10.5	32.59			0	10.5	32.59	25.01	.000
10	10.40	32.57	.54		10	10.40	32.57	25.01	.030
20	10.26	32.59			20	10.26	32.59	25.05	.059
30	9.38	32.69	.57		30	9.38	32.69	25.27	.087
50	5.90	32.83			50	5.90	32.83	25.88	.135
75	4.63	32.93	.56		75	4.63	32.93	26.10	.186
100	4.12	33.16			100	4.12	33.16	26.34	.232
125	4.44	33.52	.32		150	4.60	33.78	26.78	.307
149	4.60	33.78	.20		200	4.20	33.90	26.91	.368
172	4.34	33.84			250	4.18	33.99	26.99	.425
196	4.21	33.89	.12		300	3.98	34.06	27.06	.478
290	4.00	34.05			400	3.83	34.14	27.14	.578
464	3.72	34.20	.04		500	3.67	34.22	27.22	.672
757	3.16	34.33			600	3.47	34.28	27.29	.758
1089	2.68	34.43	.06		700	3.28	34.31	27.33	.841
					800	3.10	34.34	27.37	.919
					1000	2.80	34.40	27.45	1.067

Station 6: 51°00'N., 175°00'W., 7 August 1957. Messenger time: 0335, 0535 GCT. Weather 01. Clouds: type 0, amt. 8. Wind: 180°T, 3 kts. Sea 1. Swell 1. Bar: 1026 mbs. Temp: dry 53.0°F, wet 51.0°F. BT 90.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/∞)	O <sub>2</sub> (mg-at/L)	PO <sub>4</sub> -P (μg-at/L)	DEPTH (m)	T (°C)	S (°/∞)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	10.5	32.73			0	10.5	32.73	25.12	.000
10	10.00	32.67	.60		10	10.00	32.67	25.16	.028
20	9.72	32.68			20	9.72	32.68	25.21	.056
30	9.39	32.69	.61		30	9.39	32.69	25.27	.084
50	4.70	32.83			50	4.70	32.83	26.01	.131
75	4.43	33.19	.48		75	4.43	33.19	26.33	.177
100	4.18	33.42			100	4.18	33.42	26.53	.218
125	4.30	33.59	.29		150	4.35	33.79	26.81	.287
145	4.34	33.77	-		200	4.26	33.94	26.94	.347
169	4.36	33.86			250	3.90	33.99	27.02	.403
193	4.30	33.93	.26		300	3.66	34.04	27.08	.455
290	3.66	34.03			400	3.71	34.12	27.14	.554
484	3.73	34.19	.05		500	3.69	34.20	27.20	.648
776	3.10	34.30			600	3.48	34.24	27.26	.738
1094	2.54	34.44	.08		700	3.26	34.28	27.31	.822
					800	3.04	34.32	27.36	.903
					1000	2.71	34.40	27.45	1.050

# Oceanographic Station Data, M/V **Paragon**

Station 7: 50°00'N., 175°00'W., 8 August 1957. Messenger time: 0610, 0724 OCT. Weather 01. Clouds: type 0, amt. 8. Wind: 340°T, 12 kts. Sea 3. Swell 2. Bar 1025 mbs. Temp: dry 51.0°F, wet 49.0°F. BT 94.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (‰)	O <sub>2</sub> (ml- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (‰)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	10.0	32.77			0	10.0	32.77	25.24	.000
10	9.38	32.75	.55		10	9.38	32.75	25.32	.027
20	9.39	32.75			20	9.39	32.75	25.32	.054
30	9.24	32.75	-		30	9.24	32.75	25.34	.080
50	5.32	32.97			50	5.32	32.97	26.06	.126
75	4.38	33.10	.57		75	4.38	33.10	26.26	.173
100	3.40	33.31			100	3.40	33.31	26.52	.214
125	4.27	33.63	.29		150	4.07	33.68	26.75	.285
145	4.10	33.66	.29		200	3.55	33.77	26.88	.348
169	3.98	33.74			250	3.85	33.89	26.94	.407
193	3.54	33.76	.27		300	3.82	33.98	27.02	.462
290	3.82	33.97			400	3.77	34.10	27.12	.565
485	3.74	34.19	.05		500	3.69	34.20	27.20	.661
779	3.16	34.32			600	3.50	34.25	27.26	.750
1088	2.56	34.43	.07		700	3.30	34.29	27.31	.834
					800	3.10	34.32	27.36	.914
					1000	2.73	34.40	27.45	1.063

Station 8: 53°00'N., 175°00'W., 12 August 1957. Messenger time: 0545, 0730 OCT. Weather 03. Clouds: type 0, amt. 9. Wind: 200°T, 10 kts. Sea 2. Swell 3. Bar. 996 mbs. Temp: dry 50.0°F, wet 50.0°F. BT 103.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (‰)	O <sub>2</sub> (ml- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (‰)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	9.8	33.02		0.8	0	9.8	33.02	25.46	.000
10	9.18	33.05	.62	1.0	10	9.18	33.05	25.59	.025
20	7.24	33.11			20	7.24	33.11	25.92	.047
30	6.79	33.16	.58	1.2	30	6.79	33.16	26.02	.068
50	4.80	33.19			50	4.80	33.19	26.29	.105
75	4.13	33.22	.60	1.5	75	4.13	33.22	26.38	.148
100	3.30	33.25			100	3.30	33.25	26.48	.188
125	3.36	33.31	.52	1.8	150	2.65	33.38	26.65	.262
(200)	3.89	33.52	.38	2.2	200	3.89	33.52	26.64	.333
264	3.82	33.71			250	3.83	33.67	26.77	.401
(442)	3.73	33.99	.15	2.4	300	3.81	33.80	26.87	.464
696	3.27	34.16			400	3.76	33.95	27.00	.580
944	2.90	34.34	.06	2.6	500	3.62	34.03	27.08	.686
					600	3.42	34.10	27.15	.787
					700	3.25	34.17	27.22	.880
					800	3.11	34.24	27.29	.968
					1000	(2.85)(34.38)		27.43	1.125

# Oceanographic Station Data, M/V Paragon

Station 9: 54°30'N., 175°00'W., 13 August 1957. Messenger time: 0735, 0931 GCT. Weather 03 Clouds: type 0, amt. 9. Wind: 190°T, 2 kts. Sea 2. Swell 2. Bar 1006 mbs. Temp: dry 51.0°F, wet 50.0°F. BT 108.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/∞)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/∞)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	10.3	33.04			0	10.3	33.04	25.39	.000
10	9.72	33.01	.59		10	9.72	33.01	25.47	.026
20	9.48	33.01			20	9.48	33.01	25.51	.051
30	7.64	33.10	.63		30	7.64	33.10	25.86	.074
50	4.45	33.19			50	4.45	33.19	26.32	.113
75	3.70	33.22	.61		75	3.70	33.20	26.41	.154
100	2.87	33.20			100	2.87	33.20	26.48	.194
125	2.92	33.21	.61		150	2.98	33.26	26.52	.272
149	2.98	33.26	.60		200	3.24	33.39	26.60	.346
174	2.84	33.28			250	3.52	33.53	26.69	.417
199	3.24	33.39	.47		300	3.68	33.68	26.79	.484
299	3.68	33.68			400	3.68	33.88	26.95	.605
498	3.63	34.01	.11		500	3.63	34.01	27.06	.715
796	3.12	34.24			600	3.44	34.10	27.15	.816
1116	2.54	34.38	.05		700	3.27	34.17	27.22	.910
					800	3.09	34.24	27.29	.997
					1000	2.63	34.34	27.41	1.154

Station 10: 56°00'N., 175°00'W., 15 August 1957. Messenger time: 0600 GCT. Weather 01. Clouds: type 6, amt. 8. Wind: 180°T, 28 kts. Sea 4. Swell 4. Bar. 1008 mbs. Temp: dry 50.0°F, wet 49.0°F. BT 115.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/∞)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/∞)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	10.1	32.88			0	10.1	32.88	25.30	.000
9	10.00	32.85	.59		10	10.00	32.85	25.30	.027
22	10.02	-			20	10.02	32.84	25.29	.054
44	8.24	32.84	.51		30	9.90	32.84	25.31	.081
70	4.48	33.01			50	7.25	32.86	25.72	.130
96	3.53	33.17	.52		75	4.00	33.04	26.25	.181
122	3.51	33.27			100	3.51	33.18	26.41	.224
148	3.16	33.31	.52		150	3.16	33.32	26.55	.302



# Oceanographic Station Data, M/V Paragon

Station 11: 54°00'N., 175°00'W., 16 August 1957. Messenger time: 0808 GCT. Weather 02. Clouds: type 6, amt. 5. Wind: 230°T, 16 kts. Sea 3. Swell 3. Bar. 1021 mbs. Temp: dry 50.0°F, wet 48.0°F. BT 119.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	9.8	33.13			0	9.8	33.13	25.55	.000
10	9.73	33.07			10	9.73	33.07	25.51	.025
20	9.42	33.07			20	9.42	33.07	25.56	.049
50	6.73	33.14			30	8.50	33.07	25.71	.073
75	4.11	33.21			50	6.73	33.14	26.01	.116
100	3.82	33.25			75	4.11	33.21	26.38	.162
125	3.10	33.31			100	3.82	33.25	26.44	.203
150	2.97	33.34			150	2.97	33.34	26.59	.280
175	3.36	33.42			200	3.77	33.54	26.67	.351
200	3.77	33.54			250	3.85	33.77	26.85	.417
277	3.82	33.83			300	3.83	33.87	26.93	.477
(338)	3.83	33.92			400	3.73	34.00	27.04	.588
583	3.40	-			500	3.55	34.10	27.14	.689
828	3.08	34.31			600	3.39	34.19	27.23	.783
					700	3.24	34.24	27.28	.870
					800	3.10	34.30	27.34	.953

Station 12: 53°00'N., 175°00'W., 17 August 1957. Messenger time: 0550, 0720 GCT. Weather 01. Clouds: type 0, amt. 8. Wind: 270°T, 3 kts. Sea 2. Swell 2. Bar. 1022 mbs. Temp: dry 52.0°F, wet 49.5°F. BT 123.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/oo)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	10.1	-		0.8	0	10.1	33.08	25.46	.000
10	10.04	33.08	.60	0.8	10	10.04	33.08	25.47	.025
20	9.68	33.07			20	9.68	33.07	25.52	.050
30	9.90	33.09	.60	0.9	30	9.90	33.09	25.50	.074
50	5.31	33.22			50	5.31	33.22	26.25	.117
75	3.93	33.25	.59	1.3	75	3.93	33.25	26.42	.160
100	3.40	33.27			100	3.40	33.27	26.49	.199
125	3.04	33.28	.58	1.5	150	3.08	33.32	26.56	.276
149	3.08	33.32	.53		200	3.51	33.56	26.71	.347
168	3.14	33.40			250	3.72	33.74	26.84	.411
187	3.40	33.50	.36		300	3.73	33.84	26.91	.472
258	3.78	33.76			400	3.62	33.96	27.02	.584
556	3.12	34.08			500	3.38	34.04	27.11	.688

# Oceanographic Station Data, N/V Paragon

Station 13: 50°00'N., 175°00'W., 20 August 1957. Messenger time: 0416, 0640 GCT. Weather 03. Clouds: type 0, amt. 8. Wind: 080°T, 3 kts. Sea 2. Swell 1. Bar. 1021 mbs. Temp: dry 52.0°F, wet 50.0°F. BT 135.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/∞)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/∞)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	11.4	32.72		0.7	0	11.4	32.72	24.95	.000
10	11.42	32.71	.55	0.9	10	11.42	32.71	24.94	.030
20	10.42	32.74			20	10.42	32.74	25.14	.060
30	9.46	32.76	.60	1.0	30	9.46	32.76	25.32	.087
49	4.86	33.02			50	4.86	33.02	26.14	.133
74	4.23	33.21	.46	1.5	75	4.22	33.22	26.37	.177
98	4.12	33.40			100	4.11	33.40	26.53	.217
123	4.16	33.47	.35	2.0	150	4.32	33.63	26.69	.289
139	4.28	33.57	.34	2.2	200	4.26	33.82	26.84	.355
163	4.34	33.68			250	4.15	33.91	26.93	.415
187	4.30	33.79	.22	2.3	300	4.02	34.00	27.01	.471
284	4.06	33.97			400	3.80	34.10	27.11	.574
482	3.61	34.17	.10	2.6	500	3.60	34.18	27.20	.670
778	3.00	34.30			600	3.40	34.22	27.25	.760
1076	2.60	34.43	.09	2.8	700	3.19	34.27	27.31	.845
					800	2.99	34.31	27.36	.925
					1000	2.70	34.40	27.46	1.072

Station 14: 51°00'N., 175°00'W., 22 August 1957. Messenger time: 0533, 0742 GCT. Weather 03. Clouds: type 6, amt. 9. Wind: 140°T, 32 kts. Sea 4. Swell 4. Bar. 1019 mbs. Temp: dry 50.0°F, wet 47.0°F. BT 140.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/∞)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/∞)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	11.1	32.71		0.9	0	11.1	32.71	25.00	.000
10	11.14	32.72	.56	1.0	10	11.14	32.72	25.00	.030
20	11.04	32.73			20	11.04	32.73	25.03	.059
30	9.85	32.72	.60	1.0	30	9.85	32.72	25.22	.088
49	6.23	32.84			50	6.23	32.84	25.34	.137
74	4.10	33.04	.52	1.4	75	4.10	33.04	26.24	.187
99	4.10	33.31			100	4.10	33.31	26.46	.229
123	4.16	33.65	-	1.7	150	4.28	33.80	26.83	.300
(140)	4.30	33.76	.29	2.1	200	3.70	33.95	27.00	.358
(238)	3.22	34.02			250	3.38	34.02	27.09	.410
(434)	3.68	34.14	.14	2.5	300	4.08	34.06	27.05	.461
728	3.06	34.32			400	3.81	34.12	27.13	.562
1064	2.60	34.43	.15	2.8	500	3.53	34.18	27.20	.657
					600	3.33	34.24	27.27	.745
					700	3.12	34.30	27.34	.828
					800	2.97	34.35	27.39	.905
					1000	2.69	34.41	27.46	1.048

# Oceanographic Station Data, M/V Paragon

Station 15: 51°30'N., 171°00'W., 23 August 1957. Messenger time: 0621, 0820 GCT. Weather 03. Clouds: type 0, amt. 9. Wind: 160°T, 27 kts. Sea 4. Swell 4. Bar. 1015 mbs. Temp: dry 54.0°F, wet 53.0°F. BT 143.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/∞)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/∞)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	11.4	32.30		0.6	0	11.4	32.30	24.63	.000
10	11.16	32.25	.58	1.0	10	11.16	32.25	24.63	.033
20	11.19	32.26			20	11.19	32.26	24.63	.066
30	11.12	32.29	.58	1.3	30	11.12	32.29	24.67	.099
50	7.26	32.76			50	7.26	32.76	25.64	.156
75	4.42	32.91	.56	1.5	75	4.42	32.91	26.11	.210
100	4.05	33.05			100	4.05	33.05	26.26	.256
125	4.07	33.32	.40	1.6	150	4.45	33.68	26.71	.334
150	4.45	33.57	.30	2.4	200	4.34	33.94	26.93	.397
200	4.32	33.95			250	4.25	33.99	26.98	.453
(407)	3.82	34.08	.06	2.8	300	4.10	34.02	27.02	.508
710	-	34.24			400	3.84	34.08	27.09	.612
1008	2.83	34.38	.10	3.0	500	3.63	34.13	27.15	.711
					600	3.43	34.18	27.21	.804
					700	3.23	34.24	27.28	.892
					800	3.10	34.28	27.32	.975
					1000	2.83	34.38	27.43	1.129

Station 16: 51°30'N., 175°00'W., 29 August 1957. Messenger time: 1323 GCT. Weather 48. Clouds: type 6, amt. 8. Wind: 220°T, 1 kt. Sea 0. Swell 2. Bar. 1013 mbs. Temp: dry 48.0°F, wet 46.0°F. BT 145.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/∞)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/∞)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	7.8	32.39	-		0	7.8	32.39	25.28	.000
10	6.25	32.83	.59		10	6.25	32.83	25.83	.024
25	6.16	33.17	.54		20	5.30	32.95	26.04	.045
50	6.08	33.24	.50		30	6.16	33.18	26.12	.065
80	5.14	33.35	.42		50	6.08	33.24	26.18	.102
110	4.92	33.42	.38		75	5.20	33.33	26.35	.147
140	4.58	33.53	.30		100	5.02	33.40	26.43	.188
170	4.61	33.63	.27		150	4.60	33.56	26.60	.265



# Oceanographic Station Data, M/V Paragon

Station 17: 51°00'N., 172°30'W., 30 August 1957. Messenger time: 0425 GCT. Weather 03. Clouds: type 6, amt. 7. Wind: 220°T, 1 kt. Sea 0. Swell 2. Bar. 1013 mbs. Temp: dry 54.0°F, wet 52.0°F. BT 150.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/∞)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/∞)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	11.2	32.58	-	-	0	11.2	32.58	24.88	.000
10	11.22	32.57	.55	-	10	11.22	32.57	24.87	.031
25	11.15	32.58	.56	-	20	11.11	32.57	24.89	.062
50	5.08	32.82	.59	-	30	11.1	32.62	24.93	.092
80	3.80	33.00	.52	-	50	5.0	32.82	25.96	.143
110	3.89	33.31	.40	-	75	3.8	32.98	26.22	.192
140	4.05	33.60	.25	-	100	3.8	33.21	26.40	.235
170	4.18	33.85	.12	-	150	4.10	33.68	26.75	.309

Station 18: 51°00'N., 170°00'W., 30 August 1957. Messenger time: 1640 GCT. Weather 03. Clouds: type 6, amt. 8. Wind: 230°T, 4 kts. Sea 1. Swell 2. Bar. 1010 mbs. Temp: dry 51.0°F, wet 49.0°F. BT 154.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/∞)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/∞)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	11.2	32.66	-	-	0	11.2	32.66	24.94	.000
10	11.05	32.63	.55	-	10	11.05	32.63	24.94	.030
25	10.65	32.64	.55	-	20	10.55	32.59	25.00	.060
50	7.84	32.74	.58	-	30	10.15	32.66	25.12	.089
80	4.28	32.99	.55	-	50	7.84	32.74	25.55	.142
110	4.15	33.27	.46	-	75	4.90	32.95	26.09	.197
140	4.06	33.65	.29	-	100	4.08	33.17	26.35	.243
169	3.53	33.76	.26	-	150	3.89	33.70	26.79	.317

# Oceanographic Station Data, M/V Paragon

Station 19: 50°00'N., 17°00'W., 31 August 1957. Messenger time: 0220 GCT. Weather 03. Clouds: type 6, amt. 9. Wind: 130°T, 12 kts. Sea 3. Swell 3. Bar. 1005 mbs. Temp: dry 51.5°F, wet 50.0°F. BT 157.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/∞)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/∞)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	11.4	32.55	-		0	11.4	32.55	24.82	.000
10	11.18	32.64	.56		10	11.18	32.64	24.93	.031
25	11.13	32.65	.56		20	11.17	32.65	24.94	.061
50	5.84	32.86	.60		30	8.22	32.66	25.43	.089
80	4.94	32.95			50	5.84	32.86	25.91	.136
110	4.34	33.15	.51		75	5.00	32.93	26.06	.187
140	4.05	33.52	.35		100	4.47	33.08	26.24	.234
170	3.96	33.72	.25		150	4.01	33.60	26.69	.313

Station 20: 50°00'N., 167°30'W., 31 August 1957. Messenger time: 1850 GCT. Weather 48. Clouds: type 0, amt. 9. Wind: 170°T, 15 kts. Sea 3. Swell 3. Bar. 986 mbs. Temp: dry 52.0°F, wet 52.0°F. BT 161.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/∞)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/∞)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	10.9	32.65	-		0	10.9	32.65	24.99	.000
10	10.71	32.61	.55		10	10.71	32.61	24.99	.030
25	10.70	32.61	.56		20	10.70	32.61	24.99	.060
50	6.92	32.74	.58		30	10.70	32.62	25.00	.089
80	4.37	32.97	.53		50	6.92	32.74	25.67	.142
110	4.14	33.39	.37		75	4.40	32.95	26.14	.195
140	4.14	33.66	.25		100	4.05	33.26	26.42	.239
170	4.00	33.81	.19		150	4.10	33.71	26.77	.312

# Oceanographic Station Data, M/V Paragon

Station 21: 50°04'N., 155°09'W., 3 September 1957. Messenger time: 2157, 2330 GCT. Weather 03. Clouds: type 0, amt. 7. Wind: 360°T, 35 kts. Sea 6. Swell 6. Bar. 990 mbs. Temp: dry 52.0°F, wet 51.0°F. BT 166.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/∞)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/∞)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	12.7	32.53	-		0	12.7	32.53	24.56	.000
10	12.86	32.63	.53		10	12.86	32.63	24.61	.034
20	11.14	32.70			20	11.14	32.70	24.98	.065
35	11.03	32.84	.58		30	10.95	32.79	25.09	.095
50	5.58	32.89			50	5.58	32.89	25.96	.144
75	5.24	32.90	.45		75	5.24	32.90	26.01	.195
100	4.00	33.31			100	4.00	33.31	26.47	.240
146	3.63	33.52	.52		150	3.65	33.56	26.70	.314
170	3.91	33.72			200	3.89	33.82	26.88	.378
194	3.90	33.81	.18		250	3.84	33.89	26.94	.436
292	3.80	33.94			300	3.79	33.95	26.99	.492
486	3.60	34.17	.04		400	3.70	34.08	27.11	.597
777	3.10	34.30			500	3.57	34.18	27.20	.692
1068	2.64	34.44	.05		600	3.40	34.22	27.25	.782
					700	3.22	34.27	27.31	.867
					800	3.05	34.31	27.35	.948
					1000	2.74	34.41	27.46	1.096

Station 22: 50°00'N., 145°00'W., 7 September 1957. Messenger time: 0505 GCT. Weather 03. Clouds: type 0, amt. 9. Wind: 210°T, 35 kts. Sea 5. Swell 6. Bar. 1008 mbs. Temp: dry 58.0°F, wet 55.0°F. BT 176.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/∞)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/∞)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	13.2	32.56	-		0	13.2	32.56	24.49	.000
9	13.02	32.53	.51		10	13.02	32.53	24.50	.035
23	13.0	32.70	.52		20	13.00	32.66	24.60	.068
47	8.60	32.78	.57		30	13.00	32.72	24.65	.102
75	6.11	32.80	.57		50	8.33	32.78	25.51	.160
102	5.15	33.17	-		75	6.11	32.80	25.83	.218
130	4.55	-	-		100	5.21	33.11	26.18	.269
160	3.82	33.57	-		150	4.00	33.51	26.63	.351



# Oceanographic Station Data, M/V Paragon

Station 23: 50°02'N., 140°00'W., 8 September 1957. Messenger time: 0650, 0940 GCT. Weather 50. Clouds: type 0, amt. 8. Wind: 230°T, 15 kts. Sea 3. Swell 2. Bar 1024 mbs. Temp: dry 57.0°F, wet 55.0°F. BT 184.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/∞)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/∞)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	13.8	32.57			0	13.8	32.57	24.37	.000
10	13.62	32.55	.52		10	13.62	32.55	24.40	.036
20	13.62	32.56			20	13.62	32.56	24.40	.071
30	13.62	32.56	.52		30	13.62	32.56	24.40	.106
50	8.90	32.70			50	8.90	32.70	25.36	.168
75	6.94	32.82	.56		75	6.94	32.82	25.73	.230
100	5.76	32.90			100	5.76	32.90	25.95	.284
125	5.24	33.28	.53		150	4.71	33.53	26.57	.373
146	4.76	33.46	.47		200	4.49	33.73	26.75	.444
171	4.58	33.67			250	4.41	33.78	26.80	.509
195	4.50	33.72	.37		300	4.28	33.82	26.84	.572
293	4.31	33.81			400	4.01	33.93	26.96	.692
489	3.79		.08		500	3.75	34.02	27.06	.801
782	3.16	34.23			600	3.54	34.10	27.14	.903
1041	2.80	34.33	.05		700	3.33	34.18	27.22	.998
					800	3.13	34.24	27.29	1.085
					1000	2.85	34.32	27.38	1.247

Station 24: 50°00'N., 135°00'W., 10 September 1957. Messenger time: 0140, 0340 GCT. Weather 01. Clouds: type 0, amt. 7. Wind: 140°T, 8 kts. Sea 2. Swell 2. Bar 1030 mbs. Temp: dry 59.0°F, wet 56.0°F. BT 193.

OBSERVED					INTERPOLATED			COMPUTED	
DEPTH (m)	T (°C)	S (°/∞)	O <sub>2</sub> (mg- at/L)	PO <sub>4</sub> -P (μg- at/L)	DEPTH (m)	T (°C)	S (°/∞)	σ <sub>t</sub> (g/L)	Δ D (dyn m)
0	14.6	32.48			0	14.6	32.48	24.14	.000
10	14.10	32.44	.50		10	14.10	32.44	24.21	.038
20	14.1	32.44			20	14.10	32.44	24.21	.075
30	9.47	32.57	.58		30	9.47	32.57	25.17	.107
50	6.54	32.65			50	6.54	32.65	25.65	.159
75	5.94	32.65	.57		75	5.94	32.65	25.73	.217
100	5.54	32.67			100	5.54	32.67	25.79	.273
125	5.23	32.71	.55		150	5.20	33.41	26.42	.370
140	5.07	33.20	.50		200	5.36	33.86	26.75	.444
164	5.69	33.69			250	5.02	33.91	26.83	.508
188	5.48	33.84	.28		300	4.76	(33.93)	26.88	.570
285	4.81	33.92							
485	4.10	-	.22						
785	3.40	-							
1085	2.81	-	.11						

Oceanographic Station Data, M/V **Paragon**

Station 25: 50°00'N., 130°00'W., 12 September 1957. Messenger time: 0410, 0515 GMT. Weather 46. Clouds: type 0, amt. 9. Wind: 330°T, 20 kts. Sea 5. Swell 4. Bar: 1021 mbs. Temp: dry 60.0°F, wet 59.0°F. BF 203.

OBSERVED

DEPTH (m)	T (°C)	S (°/oo)	O <sub>2</sub> (mg-at/L)	PO <sub>4</sub> -P (μg-at/L)
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0	15.7	32.10		
10	15.7	32.09	..	
20	15.72	32.08		
30	14.51	32.15	..	
50	8.06	32.57		
75	6.44	32.77	.	
100	6.52	32.90		
125	6.43	33.25	..	
140	6.48	33.58	.39	
163	6.77	33.79		
280	5.57	33.88		
467	4.90	34.02	.32	
748	3.90	34.22		
1029	3.32	34.34	.05	

INTERPOLATED

DEPTH (m)	T (°C)	S (°/oo)
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0	15.7	32.10
10	15.72	32.09
20	15.72	32.08
30	14.51	32.15
50	8.06	32.57
75	6.44	32.77
100	6.52	32.90
150	6.51	33.68
200	6.37	33.84
250	5.72	33.87
300	5.50	33.90
400	5.14	33.97
500	4.78	34.04
600	4.43	34.12
700	4.08	34.19
800	3.76	34.24
1000	3.33	34.33

COMPUTED

σ <sub>t</sub> (g/L)	Δ D (dyn m)
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23.61	.000
23.60	.043
23.59	.086
23.90	.128
25.38	.194
25.76	.255
25.85	.310
26.47	.404
26.61	.481
26.72	.551
26.77	.619
26.86	.747
26.96	.866
27.06	.978
27.16	1.080
27.23	1.175
27.34	1.348

Summary of Observations at Bathymograph Lowerings, M/V Paragon 1957  
(for coded values see H.O. Pub. 606-C)

900' BT, Ser. No. 7803

Ser. No.	Time GCT	Date 1957	Latitude N.	Longitude W.	Bkt. Temp. °C	Wind		Air Temp. Wet Bulb °F	Bar. mbs	Wea. ther	Clouds		Vis Sea	Swell		Surf. Sal. ‰
						Dir. °T	Force kts.	Dry Bulb °F			Type	Amt.		Dir. °T	Amt.	
1	0405	7/11	55°32'	150°04'	12.2	11	8	54	52	03	0	9	6	2	13	2
2	0645	7/11	55 32	150 42	11.5	14	10	53	50		7	9	6	2	13	2
3	0950	7/11	55 35	151 12	12.0	14	20	53	50		7	9	6	3	13	2
4	1244	7/11	55 31	152 03	11.4	14	25	52	50		7	9	6	3	13	2
5	1515	7/11	55 30	152 34	11.5	14	30	51.5	50	18	7	9	6	3	13	2
6	1800	7/11	55 28	153 10	11.3	14	28	52	50	18	7	9	6	3	13	2
7	2050	7/11	55 25	153 45	12.2	14	30	51	50	18	7	9	5	3	13	2
8	2335	7/11	55 23	154 22	11.6	14	33	51	50	20	7	9	5	3	13	2
9	0220	7/12	55 21	155 02	11.5	14	33	51	50	52	7	9	4	4	13	2
10	0510	7/12	55 17	155 40	10.3	14	30	50	50	21	7	9	4	4	13	2
11	0750	7/12	55 17	156 20	9.2	09	25	51	49	21	7	9	4	4	13	2
12	2130	7/13	55 20	159 30	9.7	02	30	50	50	21	7	9	4	4	09	2
13	1400	7/14	54 37	163 00	10.2	00	0	50	49	15	6	5	7	1	00	0
14	1630	7/14	54 28	163 44	10.3	00	0	52	50	16	6	7	8	1	01	1
15	1915	7/14	54 21	164 23	10.9	00	0	52	50	16	6	7	9	1	29	1
16	1925	7/14	54 21	164 23	10.9	00	0	52	50	16	6	7	9	1	29	1
17	2215	7/14	54 19	164 43	10.1	00	0	52	51	16	6	6	9	1	29	1
18	2345	7/14	54 20	165 05	7.2	29	2	49	48	16	6	9	8	2	29	1
19	0230	7/15	54 20	165 35	7.2	26	1	49	47.5	17	47	-	1	2	26	1
20	0430	7/15	54 17	166 03	7.5	26	1	48.5	48	17	47	-	2	2	26	1
21	0645	7/15	54 06	166 14	6.9	29	5	47	45	17	45	-	2	2	29	1
22	0230	7/16	54 03	166 44	8.4	09	5	54	50	16	03	0	8	1	09	1
23	0500	7/16	53 52	167 30	9.2	07	5	45	47	16	47	-	3	2	07	1
24	0900	7/16	53 40	168 49	7.4	01	8	45	44	16	47	-	3	3	01	2
25	1330	7/16	53 26	168 56	6.3	27	3	44	43	16	01	-	8	2	28	2
26	1850	7/16	53 06	169 38	5.8	36	5	45	44	16	01	0	8	3	36	2
27	2215	7/16	52 55	170 30	7.8	36	7	49	46	16	01	6	6	3	35	2
28	0140	7/17	52 39	171 10	6.0	33	3	46	44	16	49	-	2	2	33	2
29	0540	7/17	52 41	172 04	5.6	36	15	44	43	17	49	-	2	4	36	4
30	0950	7/17	52 42	172 53	7.0	01	10	45	45	19	51	7	-	2	02	2
																33.03
																32.37
																32.46
																32.61
																32.64
																33.13
																33.03
																33.15
																33.30
																33.30



Summary of Observations at Bathymthermograph Lowerings, M/V Paragon 1957  
(for coded values see H.O. Pub. 606-C) (continued)

900' BT, Ser. No. 7803

Ser. No.	Time GCT	Date 1957	Latitude N.	Longitude W.	Hkt. Temp. °C	Wind		Air Temp. Dry Bulb of	Wet Bulb of	Bar. mbs	Wear-Clouds		Vis Sea		Dir. Amt. Swell		Surf. Sct. o/oo
						Dir. °T	Force kts.				Wear ther	Type			Dir. °T	Amt.	
31	1355	7/17	52°38'	173°41'	7.6	02	10	45	44	19	48	0	9	2	02	2	33.08
32	1750	7/17	52 28	174 29	7.4	29	10	46	45	20	50	7	9	2	29	2	33.03
33	2210	7/17	52 20	175 12	7.2	29	10	45	45	20	48	7	9	3	27	3	33.05
34	0210	7/18	52 11	175 48	7.5	34	25	46	45	19	45	7	9	3	33	3	33.10
35	1905	7/20	50 34	175 37	8.7	00	0	47	46	31	03	6	9	1	36	1	32.72
36	2210	7/20	50 15	175 13	8.8	06	8	45	48	31	01	6	4	1	02	1	32.72
37	0415	7/21	50 00	175 00	9.8	34	3	55	52	32	01	8	2	1	34	1	32.83
38	2200	7/21	50 03	174 56	10.5	36	3	51	48	34	02	8	3	1	36	1	32.84
39	2300	7/21	50 03	174 56	10.4	36	3	54	50	34	02	8	3	1	36	1	32.84
40	2400	7/21	50 03	174 56	10.3	36	3	54	50	34	02	8	3	1	36	1	32.84
41	0100	7/22	50 03	174 56	10.4	33	3	54	50	34	03	6	8	1	35	1	32.85
42	0200	7/22	50 03	174 56	10.2	33	3	53	49	34	03	6	8	1	34	1	32.85
43	0300	7/22	50 00	175 00	10.6	32	3	52	49	34	03	6	8	1	34	1	32.85
44	0400	7/22	50 00	175 00	11.0	32	3	51	47	34	03	6	8	1	34	1	32.85
45	0500	7/22	50 00	175 00	10.8	32	3	49	47	34	03	6	8	1	34	1	32.85
46	0300	7/23	50 40	174 59	9.9	32	8	49	48	25	03	0	9	3	32	3	32.75
47	0915	7/23	51 32	175 12	9.7	32	2	48	46	25	47	-	-	4	27	3	32.60
48	1200	7/23	51 48	175 21	9.9	00	0	45	45	25	49	-	9	1	36	1	32.95
49	1535	7/23	52 08	175 19	6.0	00	0	42	42	25	49	-	9	1	36	1	33.19
50	1830	7/23	52 29	175 10	7.7	36	2	43	42	25	49	0	9	1	35	1	33.00
51	2105	7/23	52 40	175 00	8.8	27	3	45	44	24	42	-	9	2	33	2	33.07
52	0240	7/24	53 00	175 00	8.6	23	5	47	46	22	47	-	9	2	22	2	33.08
53	2050	7/24	53 00	175 01	8.9	27	10	49	48	15	47	-	9	2	29	2	33.07
54	2135	7/24	53 00	175 00	9.2	32	10	49	48	12	47	0	9	3	32	3	33.06
55	2035	7/25	53 05	175 05	8.7	02	8	48	47	16	01	0	3	3	02	3	33.06
56	2330	7/25	53 23	175 05	8.9	36	10	51	49.5	18	03	0	9	3	01	3	33.12
57	0220	7/26	53 43	175 00	8.8	04	10	49.5	48	19	01	0	2	3	01	3	33.12
58	0515	7/26	54 03	174 59	8.7	03	10	49	47	19	03	0	8	3	01	3	33.13
59	0815	7/26	54 25	175 00	9.0	03	10	47.5	47	21	03	0	9	3	01	3	33.05
60	1105	7/26	54 45	174 58	9.2	00	0	45	45	21	48	0	9	2	01	2	33.13

Summary of Observations at Bathymograph Lowerings, M/V Paragon 1957  
(for coded values see H.O. Pub. 606-C) (continued)

900' BT, Ser. No. 7803

Stn. No.	Time GCT	Date 1957	Latitude N.	Longitude W.	Rt. Temp. °C	Wind		Air Temp. Wet Bulb of	Bar. mbs	Wgt. ther	Type Amt.		Dir. Amt. Ser.	Surf. Sea. °/oo
						Dir. °T	Force kts.	Dry Bulb °T			Dir. °T	Amt.		
61	1350	7/26	55°06'	174°57'	8.3	00	0	45	43	20	49	-	1	1
62	1700	7/26	55 30	175 07	8.9	26	5	45	44	20	49	6	2	1
63	1950	7/26	55 49	174 55	9.1	36	5	46	45	20	01	7	1	1
64	0340	7/27	56 00	175 00	9.3	27	5	49.	47	21	01	0	2	2
65	2030	7/27	56 00	175 00	9.2	23	8	47	46	23	03	0	3	3
66	0600	7/28	56 00	175 00	9.3	24	8	48.5	47	25	03	0	2	1
67	2050	7/28	56 00	175 01	9.4	16	2	47.5	44	27	03	0	2	1
68	0010	7/29	55 39	175 02	8.8	13	5	48	47	26	03	0	1	1
69	0215	7/29	55 19	174 59	8.7	18	5	49	47	26	03	0	2	1
70	0450	7/29	55 00	174 57	8.7	18	5	48	45	26	03	0	1	1
71	0740	7/29	54 39	175 00	8.8	18	5	47	43	26	03	0	2	1
72	1101	7/29	54 19	175 00	8.6	00	0	47	45	27	03	0	2	1
73	1345	7/29	53 56	175 00	8.7	11	3	47.5	45	26	03	0	2	1
74	1640	7/29	53 37	175 04	9.0	10	5	46	45	25	03	0	2	1
75	1920	7/29	53 17	175 04	9.0	10	8	47.5	45	26	03	0	1	1
76	0510	7/30	53 00	174 59	9.2	06	4	49	47	25	03	7	1	1
77	2200	7/30	53 03	174 55	9.3	09	5	49	47	24	01	6	1	1
78	0410	7/31	53 00	175 00	9.3	06	8	50	48	23	03	6	1	1
79	2115	7/31	53 00	174 55	9.3	07	6	50	48	23	02	6	1	1
80	0250	8/1	53 01	175 00	9.7	10	10	51	48	22	01	6	1	1
81	1910	8/1	53 00	174 55	9.2	08	8	49	47	21	01	6	1	1
82	2155	8/1	52 45	175 20	9.0	05	12	50	48	21	03	0	2	2
83	0045	8/2	52 28	175 43	9.3	10	15	49	47	20	01	0	2	2
84	0330	8/2	52 15	176 08	8.9	09	15	49	47	19	02	0	2	2
85	0320	8/6	51 39	175 52	7.7	22	5	50	47	19	03	6	2	2
86	0705	8/6	51 34	175 21	9.9	22	5	50	49	21	01	6	2	2
87	0930	8/6	51 30	175 03	10.4	22	5	50	49	21	01	6	2	2
88	1845	8/6	51 30	175 00	10.5	27	5	50.5	49	23	03	1	2	2
89	0030	8/7	51 12	175 10	10.7	26	4	53	51	25	01	0	1	1
90	042	8/7	51 00	175 00	10.5	18	3	53	51	26	01	0	1	1



Summary of Observations at Bathythermograph Lowerings, N/V Paragon 1957  
(for coded values see H.O. Pub. 606-C) (continued)

9001 BT, Ser. No. 7803

Ser. No.	Time GCT	Date 1957	Latitude N.	Longitude W.	Bar. Temp. °C	Wind Dir. °T	Wind Force kts.	Air Temp.		Bar. mbs	Waves other	Clouds	Vis 9ee	Swell Dir. °T	Swell Amt. o/co		
								Dry Bulb °F	Wet Bulb °F								
Type Amt.																	
91	2130	8/7	50°59'	175°01'	10.5	05	2	53	50	27	03	0	8	1	14	1	32.73
92	0010	8/8	50 39	175 03	10.7	05	4	54	50	27	02	0	9	1	14	1	32.73
93	0305	8/8	50 18	175 03	10.5	06	5	53	50	26	03	0	8	1	14	1	32.76
94	0700	8/8	50 00	175 00	10.0	34	12	51	49	25	01	0	6	3	34	2	32.77
95	2135	8/8	49 58	175 01	10.3	34	4	53	49	28	02	0	9	1	34	1	32.79
96	0350	8/9	50 00	175 00	11.0	34	4	53	49	29	02	0	9	1	34	1	32.77
97	2245	8/9	50 00	175 00	10.9	23	5	54	50	30	01	4	3	2	23	1	32.75
98	0245	8/10	50 21	175 06	10.8	18	7	53	51	29	01	4	3	2	20	1	32.81
99	0415	8/10	50 40	175 18	11.0	03	11	52	50	28	03	0	9	2	19	2	32.75
100	0700	8/10	50 57	175 34	10.4	03	10	52	50	27	03	0	9	2	19	2	37.76
101	0945	8/10	51 14	175 52	10.7	17	10	52	51	27	03	0	9	2	19	2	32.75
102	1230	8/10	51 30	176 13	8.4	18	10	50	49	26	03	0	9	2	19	2	33.02
103	0640	8/12	53 00	175 00	9.8	20	10	50	50	06	03	0	9	2	18	3	33.02
104	2000	8/12	53 03	174 51	9.2	18	2	51.5	50	05	02	0	9	1	21	1	32.08
105	2250	8/12	53 23	174 54	10.0	18	2	52	51	06	03	0	9	1	23	1	33.07
106	0135	8/13	53 44	174 54	10.3	17	2	53	52	06	02	0	8	1	23	1	33.06
107	0425	8/13	54 07	174 59	10.2	17	2	52	50.5	05	02	0	7	1	23	1	33.04
108	0910	8/13	54 30	175 00	10.3	18	2	51	50	06	03	0	9	2	18	2	33.04
109	2000	8/13	54 32	175 00	10.2	20	12	51	50	08	03	0	9	2	20	3	33.04
110	2230	8/13	54 53	175 02	9.9	19	12	51	50	08	01	0	8	2	20	2	33.04
111	0120	8/14	55 14	174 57	10.0	18	10	51.5	50	08	01	0	7	3	20	3	33.10
112	0405	8/14	55 36	174 55	10.1	18	10	50	49	08	02	0	8	3	20	3	32.81
113	0735	8/14	56 00	175 00	10.1	16	12	50	49	08	03	0	9	3	17	3	32.84
114	2030	8/14	56 00	174 56	10.1	18	25	52	50	08	01	6	8	4	23	4	32.90
115	0520	8/15	56 01	175 00	10.1	18	28	50	49	08	01	6	8	4	22	4	32.88
116	1300	8/15	55 26	174 56	9.5	18	30	49	48	13	02	6	8	4	22	4	33.09
117	1900	8/15	54 55	174 58	9.5	23	30	49	48	17	01	6	4	4	23	4	33.08
118	0030	8/16	54 27	174 56	10.8	23	30	51	49	17	01	6	2	4	23	4	33.26
119	0750	8/16	54 00	175 00	9.8	23	10	50	45	21	02	6	5	3	23	3	33.13
120	2000	8/16	53 59	174 53	9.8	23	12	51	49	20	03	0	9	3	23	3	33.09



Summary of Observations at Bathymthermograph Lowerings, M/V Paragon 1957  
(for coded values see H.O. Pub. 606-C) (continued)

900' BT, Ser. No. 7803

Ser. No.	Time GCT	Date 1957	Latitude N.	Longitude W.	Bkt. Temp. °C	Wind		Air Temp.		Bar. mbs	Wes-ther	Clouds		Vis Sea	Swell		Surf. Sal. ‰	
						Dir. °T	Force kts.	Dry Bulb °F	Wet Bulb °F			Type	Am't.		Dir. °T	Am't.		
121	2250	8/16	53°40'	174°59'	9.7	19	10	51	49	21	01	0	8	7	2	22	2	33.06
122	0130	8/17	53 20	174 59	9.9	23	5	52	50	21	01	0	8	7	2	22	2	33.08
123	0650	8/17	53 00	175 00	9.8	27	3	52	49.5	22	01	0	8	7	2	27	2	
124	2110	8/17	53 05	175 02	10.2	22	1	52	49	25	03	0	9	8	2	27	1	
125	0150	8/18	53 01	175 00	10.4	25	1	52	49	24	02	0	9	8	1	25	1	33.10
126	2030	8/18	53 06	175 01	9.8	08	4	48	45	21	03	0	9	8	2	09	2	33.08
127	2325	8/18	52 45	175 06	10.0	27	5	48.5	47	22	03	0	8	8	2	25	2	33.06
128	0106	8/19	52 25	175 08	9.7	27	7	49	47	22	50	0	9	8	2	26	2	33.08
129	0451	8/19	52 10	175 19	6.9	32	7	47	45	21	03	6	9	8	2	29	2	33.16
130	0850	8/19	51 44	175 25	9.5	00	0	48	45	22	03	0	9	5	1	29	1	32.44
131	1155	8/19	51 24	175 26	10.9	00	0	48	46	21	03	0	9	5	1	29	1	32.34
132	1500	8/19	51 02	175 17	10.6	00	0	48	46	21	03	0	9	5	1	29	1	
133	1745	8/19	50 39	175 10	10.7	08	3	49	46	21	02	0	8	7	1	16	1	32.71
134	2030	8/19	50 22	174 59	10.9	08	3	50	47	21	02	0	8	8	1	16	1	32.80
135	0640	8/20	50 00	175 00	10.8	08	3	52	50	21	03	0	8	7	2	16	1	32.72
136	0400	8/21	50 00	175 02	12.1	14	2	55	51	21	03	8	6	8	1	08	1	32.73
137	2230	8/21	50 03	174 57	11.3	15	15	53	50	19	03	6	9	7	3	17	2	32.75
138	2310	8/21	50 24	174 55	10.7	18	18	54	51	20	03	6	9	7	3	19	2	
139	0205	8/22	50 46	174 54	11.3	15	15	53	51	19	02	6	7	7	2	17	2	
140	0640	8/22	51 00	175 00	10.7	14	32	50	47	19	03	6	9	6	4	14	4	32.71
141	2220	8/22	51 15	175 02	11.7	14	25	55	53	17	03	0	9	8	4	14	4	32.71
142	2330	8/22	51 21	175 00	11.7	14	25	56	54	17	03	0	9	8	4	14	4	32.75
143	0730	8/23	51 30	175 00	11.4	16	27	54	53	15	03	0	9	8	4	14	4	32.30
144	0925	8/29	51 43	175 28	7.8	22	2	49	48	13	02	6	8	6	0	23	2	32.70
145	1300	8/29	51 30	175 00	7.8	22	1	48	46	13	48	6	8	6	0	23	2	32.39
146	1630	8/29	51 25	174 34	10.7	22	2	49	49	13	01	6	7	7	0	23	2	32.48
147	1920	8/29	51 16	174 03	11.8	22	4	53	51	14	01	6	6	8	0	23	2	
148	2200	8/29	51 13	173 33	11.6	22	4	53	51.5	14	02	6	7	8	0	23	2	32.54
149	0050	8/30	51 10	173 02	12.2	22	4	57	53	14	02	6	7	8	1	23	2	32.55
150	0415	8/30	51 00	172 30	11.3	22	1	54	52	13	02	6	7	8	0	23	2	32.58

Summary of Observations at Bathymograph Lowerings, M<sup>th</sup> Paragon 1957  
(for coded values see H.O. Pub. 606-C) (continued)

900° BT, Ser. No. 7803

Ser. No.	Time GST	Date 1957	Latitude N.	Longitude W.	Ekt. Temp. °C	Wind Dir. °T	Force kts.	Air Temp. Dry	Wet Bulb	Bar. mbs	Wea- ther	Clouds Type	Vis Type	Surf. Sal. ‰	Dir. Amt. °T	Swell Dir. Amt. °T
151	0730	8/30	51°03'	171°54'	10.2	22	2	53	51	13	02	6	7	1	23	2
152	1020	8/30	51°03'	171°20'	11.6	22	2	53	51	12	02	6	7	1	23	2
153	1310	8/30	50°59'	170°45'	11.4	17	5	52	50	11	02	6	7	1	23	2
154	1600	8/30	51°00'	170°00'	11.3	23	3	51	49	10	03	6	8	1	18	2
155	2030	8/30	50°42'	170°03'	11.3	16	6	53	51	09	02	6	7	1	18	2
156	2330	8/30	50°16'	169°59'	11.3	13	10	53	51	07	03	6	8	1	22	2
157	0200	8/31	50°03'	170°00'	11.4	13	10	51.5	50	05	02	6	9	3	22	2
158	0415	8/31	49°59'	169°28'	10.8	13	20	52	51	02	03	6	9	3	22	3
159	0810	8/31	50°03'	169°00'	11.1	13	25	52	51	97	63	0	9	6	20	3
160	1540	8/31	50°03'	167°57'	11.0	17	25	52	51	88	51	0	9	6	16	3
161	1815	8/31	50°02'	167°30'	10.9	17	15	52	52	86	48	0	8	6	19	3
162	2140	8/31	50°02'	167°00'	11.4	22	15	53	52	82	03	0	9	5	22	3
163	0045	9/1	49°57'	166°27'	11.8	23	17	53	52	84	03	0	8	5	22	4
164	0320	9/1	49°58'	165°55'	11.9	22	25	53	52	83	01	0	9	5	22	8
165	0605	9/1	49°59'	165°28'	11.4	22	40	51	50	82	03	0	7	4	32	6
166	2300	9/3	50°04'	155°09'	12.6	36	40	52	51	90	03	0	7	4	23	6
167	1930	9/5	49°40'	150°52'	12.4	24	42	53	51	84	03	0	7	5	23	7
168	2230	9/5	49°52'	150°25'	12.5	23	45	55	52	83	03	0	7	5	23	8
169	0145	9/6	50°00'	149°38'	12.6	21	50	55	53	84	03	0	7	6	23	8
170	0615	9/6	50°00'	149°02'	12.2	21	55	54	52	86	03	0	7	4	23	8
171	1500	9/6	50°00'	147°42'	11.7	21	40	55	54	93	02	0	7	7	22	7
172	1742	9/6	49°57'	147°13'	12.9	21	40	55	54	97	03	0	7	6	22	7
173	2020	9/6	50°00'	146°24'	13.2	21	40	56	55	01	01	0	6	5	22	6
174	2310	9/6	49°54'	146°06'	13.2	21	35	57	55	03	03	0	7	5	22	6
175	0150	9/7	49°59'	145°34'	13.1	21	35	57	55	05	03	0	9	5	22	6
176	0430	9/7	50°00'	145°00'	13.2	21	35	58	55	08	03	0	9	5	22	6
177	0800	9/7	49°56'	144°25'	13.2	22	35	58	55	12	01	0	7	5	22	6
178	1205	9/7	50°00'	143°37'	13.0	22	35	58	53	16	01	0	5	5	22	6
179	1605	9/7	50°00'	142°46'	13.2	22	20	56	54	19	02	7	7	6	22	5
180	1845	9/7	49°58'	142°16'	13.2	22	20	56	55	21	51	7	8	5	22	4



Summary of Observations at Bathymograph Lowerings, M/V Paragon 1977  
(for coded values see H.O. Pub. 606-C) (continued)

900: BT, Ser. No. 7803

Ser. No.	Time GCT	Date 1957	Latitude N.	Longitude W.	Hkt. Temp. °C	Wind		Air Temp.		Bar. mbs	Wea- Clouds		Vis See	Swell		Surf. Sal. ‰
						Dir. °T	Force kts.	Dry Bulb °F	Wet Bulb °F		ther	Type		Ant.	Dir. °T	
181	2130	9/7	50°00'	141°41'	13.4	22	20	56	55	21	00	6	8	6	3	32.11
182	0015	9/8	50 00	141 09	13.8	23	30	58	56	22	01	6	8	8	3	32.53
183	0245	9/8	50 01	140 37	13.9	23	32	58	56	23	03	0	9	7	4	32.54
184	0800	9/8	50 02	140 00	13.8	23	15	57	55	24	50	0	8	6	2	32.57
185	0100	9/9	50 01	139 18	13.9	21	12	57	56	28	03	0	9	8	3	32.56
186	0345	9/9	49 59	138 44	13.9	20	10	57	55	28	01	0	8	7	2	32.54
187	0645	9/9	50 01	138 15	13.7	20	5	56	54	30	02	0	9	6	1	32.54
188	0930	9/9	49 59	137 45	13.5	23	8	58	56	30	50	0	9	5	2	32.50
189	1230	9/9	49 57	137 16	13.8	19	4	55	55	30	00	0	9	5	1	32.47
190	1530	9/9	50 02	136 36	14.0	27	2	56	54	30	01	0	8	5	1	32.45
191	1800	9/9	50 02	135 58	14.2	14	3	57	55	30	01	0	8	6	1	32.40
192	2045	9/9	49 46	135 31	14.6	14	3	59	56	30	01	0	7	7	1	32.43
193	0300	9/10	50 00	135 00	14.6	14	8	59	56	30	02	0	7	7	1	32.48
194	2130	9/10	49 59	134 22	14.8	35	10	59	57	28	03	0	7	8	3	32.47
195	0015	9/11	49 59	133 54	15.0	35	12	59	57	27	02	0	7	8	4	32.46
196	0300	9/11	50 01	133 27	14.6	33	15	58	58	26	03	0	9	7	4	32.39
197	0545	9/11	50 00	132 56	14.9	33	12	58	58	25	03	0	9	5	4	32.37
198	0830	9/11	49 57	132 23	15.1	33	15	59	59	24	50	0	9	5	3	32.37
199	1115	9/11	49 55	131 52	15.0	33	15	59	58	24	50	0	9	5	4	32.25
200	1400	9/11	49 56	131 26	15.3	33	15	59	59	24	49	0	9	4	3	32.25
201	1650	9/11	49 55	130 55	15.6	33	15	59	59	24	49	0	9	5	2	32.14
202	2010	9/11	49 51	130 29	16.0	33	15	60	59	23	01	0	7	5	2	32.11
203	0445	9/11	50 00	130 00	15.7	33	20	60	59	21	46	0	9	5	5	32.10
204	2230	9/12	49 47	129 34	16.5	36	10	62	60	19	03	0	9	7	4	32.31
205	0200	9/13	49 39	129 03	16.3	34	10	60	60	18	03	0	9	7	4	32.07
206	0500	9/13	49 35	128 42	15.0	34	05	58	58	18	44	0	9	7	2	32.00
207	0800	9/13	49 19	128 03	15.0	35	5	59	59	17	01	2	2	6	1	31.63
208	1005	9/13	49 13	127 30	14.8	35	3	58	58	17	01	2	2	6	1	32.00
209	1400	9/13	48 59	127 04	15.2	07	1	58	58	17	00	0	0	9	1	31.65
210	1700	9/13	48 51	126 30	15.2	00	0	60	59	18	00	0	0	7	0	31.79



Summary of Observations at Bathymograph Lowerings, M/V Paragon 1957  
(for coded values see H.O. Pub. 606-C) (continued)

900' BT, Sec. No. 7803

Ser. No.	Time GCT	Date 1957	Latitude N.	Longitude W.	Bkt. Temp. °C	Wind		Air Temp.		Bar. mbs	Wes-ther	Clouds	Vis	Sea	Swell		Surf. Sal. ‰	
						Dir. °T	Force kts.	Dry Bulb °F	Wet Bulb °F						Dir. °T	Height		
211	2015	9/13	48°44'	125°55'	15.9	00	0	64	62	18	00	0	0	7	1	00	0	31.51
212	2350	9/13	48 37	125 20	14.6	32	4	70	62	17	03	5	1	8	1	00	0	31.33
213	0215	9/14	48 30	124 51	15.2	32	4	68	62	16	01	5	3	8	1	00	0	32.02

Plankton Data, M/V Paragon Numbers of Organisms per Cubic Meter of Water

STATION	DATE/HOUR (GCT)	DEPTH INTERVAL (m)	DISPLACEMENT VOLUME	MEDUSAE	SIPHONOPHORE	CHAETOGNATHA	GASTROPODA	COPEPODA	EUPHAUSIACEA	AMPHIPODA	OSTRACODA	Crustacean larvae	TUNICATA	Miscellaneous	Total
1	21/10	65-0	6.8	15.1	10.1	55.4	20.2	1758.7						60.5	1985.5
		300-65	5.5	6.9	4.2	31.9	9.1	294.3	1.4	55.4	10.1			20.8	392.2
		300-0	8.5	5.4		8.7		510.6		2.8	20.8			6.5	537.8
2	22/09	65-0	7.2		25.2	120.9	10.1	1451.4	5.0	25.2	120.9		25.2	231.8	2015.7
		300-65	0.5		4.2	9.7		145.8		2.8	11.1			19.4	193.0
		300-0	0.9	5.4	2.2	19.6		198.1		5.4			1.1	16.3	248.1
2	24/08	54-0	0.9	36.2	30.2	12.1		1473.3	6.0	30.2				108.7	1696.7
		300-54	5.2	2.7	9.3	14.6		425.0	1.3	8.0	13.3			26.6	500.8
		300-0	10.6	6.5	5.4	27.2		561.6		5.4	10.9			39.2	656.2
25/05	25/05	55-0	0.6	11.9				1327.5						53.3	1392.7
		300-55	11.5	2.7	6.7	13.3	8.0	695.8	2.7	4.0	6.7		2.7	33.3	775.9
		300-0	9.4		2.2	10.9		489.9		1.1	16.3			33.7	554.1
3	27/08	55-0	2.9	17.8		88.9	29.6	1001.2		17.8			29.6	59.3	1244.2
		300-55	4.9	2.7	5.3	17.3	17.3	313.2		1.3	20.0			58.7	435.8
		300-0	6.7	3.3	2.2	18.5	6.5	365.7	2.2	6.5	29.4		3.3	42.4	480.0
28/07	28/07	55-0	0.6	23.7	17.8	148.1	11.9	1641.4	5.9	5.9	29.6		302.2	474.1	2660.6
		300-55	5.9		6.7	44.0	6.7	486.6		4.0	20.0			26.7	594.7
		300-0	2.9	5.4	4.4	41.4		349.4	1.1	5.4	15.2		38.1	59.9	520.3
4	30/09	58-0	7.8*	5.6		54.2	11.2	2758.1		50.5		5.6		280.7	3165.9
		300-58	7.0	43.5	43.5	65.3		2065.9	21.8	26.1	4.4		10.9	145.9	2427.3
		300-0	14.8*	59.4	13.5	116.1	21.6	2376.4	10.8	13.5	16.2		35.1	137.7	2800.3
31/09	31/09	58-0	1.8					1942.5	11.2	33.7		5.6		106.7	2099.7
1/09	1/09	56-0	0.8	17.5			5.8	1349.7		23.3			5.8	40.7	1442.8

# Plankton Data, M/V Paragon

## Numbers of Organisms per Cubic Meter of Water

STATION	DATE/HOUR (GCT)	DEPTH INTERVAL (m)	DISPLACEMENT VOLUME	MEDUSAE	SIPHONOPHORE	CHAETOGNATHA	GASTROPODA	CORFOPA	EUPHAUSIACEA	AMPHIPODA	OSTRACODA	Crustacean Larvae	TUNICATA	Miscellaneous	Total
5	6/10	75-0 300-75 300-0	1.8 1.8 3.0	4.4 2.9 4.4	5.8 2.2	43.5 29.0 29.4	4.4	3996.8 204.6 487.7		1.5 3.3	69.7 2.9 12.0	2.9 7.6	8.7	148.0 21.8 23.9	4271.1 271.4 574.9
6	7/09	75-0 300-75 300-0	4.0 5.0 5.6	13.1 2.9 3.3		34.8 53.7 15.2	2.9	3169.6 445.5 356.9	4.4	13.1 1.4 5.4	4.4 24.7 21.8	17.4 4.4	26.1	130.6 40.6 19.6	3413.5 577.5 432.0
7	8/09	65-0 300-65 300-0	3.4 3.6 5.3	10.1 9.7 3.3	15.1 6.9 4.4	40.3 40.3 27.2	25.2 6.9 3.3	2726.1 684.4 425.6	5.0 1.1	75.6 11.1 15.2	10.1 34.7 21.8		10.1	50.4 20.8 38.1	2968.0 814.8 545.4
8	12/08	40-0 300-40 300-0	7.7 3.0 12.1		16.4 3.8 4.4	106.7 20.1 21.8	16.4	3224.6 557.2 851.3	41.0	16.4 3.8 13.1	123.1 8.8 16.3		16.4	434.9 10.0 55.5	3995.9 610.0 967.9
9	13/11	300-0	1.7	6.5	10.9	37.0	2.2	441.8		4.4	32.7		2.2	26.1	563.8
10	15/07	80-0 300-80 300-0	11.1 2.2 3.0	16.3 4.5	24.5 29.7 21.8	36.7 22.3 50.1	8.2 4.4	1883.4 393.5 1103.7		16.3 4.5 13.1	61.1 14.8 17.4		32.6 14.8 74.0	106.0 49.0 52.2	2185.1 533.1 1336.7
11	16/09	70-0 300-70 300-0	3.3 2.3 5.8	9.3 5.7 3.3	51.4 42.6 21.8		4.7 2.8	1074.4 584.7 315.7	14.0 4.4	18.7 1.1	4.7 19.9 10.9		14.2	60.7 90.8 34.8	1237.9 791.9 397.4
12	17/08	55-0 300-55 300-0	2.0 3.6 5.5		9.3	59.3 26.7 6.5	5.9 1.3 1.1	705.1 174.7 149.1	5.9 1.3 2.2	5.9 1.1	12.0 4.4		3.3	23.7 4.0 5.4	809.1 229.3 169.8



Plankton Data, M/V Paragon Numbers of Organisms per Cubic Meter of Water

STATION	DATE/HOUR (GCT)	DEPTH INTERVAL (m)	DISPLACEMENT VOLUME	MEDUSAE	SIPHONOPHORE	CHAETOGNATHA	GASTROPODA	COPEPODA	EUPHAUSIACEA	AMPHIPODA	OSTRACODA	Crustacean Larvae	TUNICATA	Miscellaneous	Total
13	21/07	40-0 300-40 300-0	0.7 5.2 5.7	16.4 2.5	7.5 9.2	16.4 60.2 21.8	4.4	2051.1 630.0 307.0	8.2	16.4 5.0 2.2	2.5 14.1	32.8 10.0 7.6	1.1	41.0 15.1 9.8	2182.3 732.8 377.2
14	22/07	48-0 300-48 300-0	2.6 5.0 5.1	6.8 1.3 1.1	3.9 1.1	68.1 22.0 27.2	108.9 13.0 2.2	2355.6 215.2 210.1	6.8 2.6 1.1	27.2 1.3 7.6	14.3 4.4	27.2 16.5	2.6	68.1 19.4 6.5	2668.7 312.1 261.3
15	23/10	300-0	5.9	4.4		26.1	215.5	879.5		6.5	21.8		6.5	32.7	1193.0
19	8/09	38-0 300-38 300-0	0.8 1.3 0.4	8.6 2.5		8.6 10.0 1.1	25.9 6.2 3.3	1107.0 149.5 66.4	8.6 2.5	17.3 1.2	6.2 2.2	173.0 2.5 2.2		69.2 10.0 7.6	1418.2 190.6 82.8
20	10/04	36-0 300-36 300-0	0.7 0.7 1.9	18.0 3.7 1.1			9.0 1.2 2.2	883.4 102.8 98.0	9.0 2.5 2.2	9.0	27.0 3.7 5.4	135.2 1.2 1.1		72.1 5.0 7.6	1162.7 126.3 138.3
21	12/06	45-0 300-45 300-0	2.5 2.3 6.1	14.5 10.2 10.9	7.3 1.3 5.4	50.9 16.6 10.9	7.3 1.3 1.1	1091.0 244.5 564.9	21.8 3.8 5.4	14.5	14.5 2.6 3.3	21.8 5.1	14.5	109.1 19.2 37.0	1367.2 304.6 638.9

Plankton Data, M/V Paragon Numbers of Copepods per Cubic Meter of Water

STATION	DEPTH INTERVAL (m)	Acartia	Calanus crystatus	Calanus finmarchicus	Calanus plumchirus	Candacia	Eucalanus bungii	Euchaeta japonica	Gaetanus	Helopeltis	Heterorhabdus	Metridia lucens	Oithona	Pleuromma	Pseudocalanus minutus	Miscellaneous
1	65-0		20.2		549.3		221.7	5.0				302.4	388.0	10.1	181.4	80.6
	300-65				20.8		90.2					73.6	56.9		52.8	
	300-0		3.3	5.4	141.5		88.2		2.2		2.2	49.0	139.3	13.1	61.0	5.4
2	65-0			45.4	201.6		171.3					70.6	589.6	15.1	257.0	100.8
	300-65		1.4		26.4		41.6					11.1	40.3			25.0
	300-0				35.9		40.3	1.1	3.3			34.8	54.4	3.3	25.0	
3	54-0				60.4		187.2					253.6	428.7		368.3	175.1
	300-54		9.3		9.3		83.7					118.2	63.7		90.3	50.5
	300-0		6.5	18.5	155.6		65.3					88.2	113.2		51.2	63.1
4	55-0				23.7		41.5					142.2	930.4		83.0	106.7
	300-55		9.3	5.3	65.3		61.3					273.3	109.3		138.7	33.3
	300-0		1.1	10.9	38.1		58.8					106.7	162.2		50.1	62.0
3	55-0		5.9	59.3	177.7		77.0					53.3	189.6	5.9	337.7	94.8
	300-55		6.7		17.3		14.6				1.3	66.7	73.3	4.0	72.0	57.3
	300-0		25.0		33.7		23.9	1.1	2.2		2.2	40.3	108.8	4.4	82.7	41.4
4	55-0				47.4		254.8					5.9	805.9		373.3	94.8
	300-55		13.3		13.3		56.0	1.3			4.0	182.7	22.7	1.3	96.0	96.0
	300-0		5.4		59.9		34.8	2.2	2.2		4.4	103.4	43.5		82.7	10.9
4	58-0	5.6	5.6	32.5	44.9		140.4	5.6				280.7	1841.4		244.1	157.3
	300-58	10.8	10.8	27.0	124.2		415.9	5.4	8.1			334.9	812.8		415.9	221.4
	300-0	2.2	2.2	76.2	124.1	4.4	222.0		6.5			89.3	866.4		505.0	169.8
58-0		11.2	11.2	5.6	22.5		33.7					662.5	640.0		443.5	112.3
	56-0		5.8	5.8	40.7		5.8					174.5	570.2		459.6	87.3

STATION	DEPTH (m)	Acartia	Calanus cristatus	Calanus finmarchicus	Calanus plumchirus	Candacia	Eucalanus bungii	Euchaeta japonica	Gaetanus	Haloptilus	Heterorhabdus	Metridia lucens	Oithona	Pleuromma	Pseudocalanus minutus	Miscellaneous
5	75-0	853.3	8.7	47.9	82.7		78.4	13.1	8.7			418.0	1563.0	30.5	840.3	52.2
	300-75	18.9			14.5		11.6		2.9			17.4	50.8	7.3	46.4	34.8
	300-0	102.3			2.2		10.9		3.3			59.9	183.9	6.5	89.3	29.4
6	75-0	26.1	17.4	56.6	135.0		26.1					200.3	2290.1		322.2	95.8
	300-75		1.5	2.9	16.0		153.8				1.4	65.3	40.6		104.5	59.5
	300-0		2.2		33.7	1.1	81.6				1.1	71.8	92.5	1.1	53.6	15.2
7	65-0			30.2	529.1		141.1					881.9	912.1	5.0	226.7	
	300-65		2.8	27.7	20.8		156.9	1.4	2.8		5.6	149.9	113.8	15.3	105.5	81.9
	300-0			10.9	27.2		78.4	1.1	2.2			101.2	99.0	13.1	56.6	35.9
8	40-0		8.2	82.1	123.1		164.1					287.2	1485.1		836.9	237.9
	300-40		3.8	5.0	10.0		146.8		2.5			52.7	182.0		102.9	51.5
	300-0		2.2	40.3	32.7		115.4		2.2			88.2	353.7	8.7	153.5	54.4
9	300-0				32.7		19.6	4.4	2.2			32.7	219.9	4.4	82.4	43.5
10	80-0		8.2	24.5	97.8		118.2		12.2			1051.7	281.3	8.2	203.8	77.5
	300-80		5.9	5.9	7.4		65.3		22.3			129.2	59.4	3.0	72.8	22.3
	300-0		2.2	10.9	26.1		121.9	2.2	10.9			411.4	326.5	4.4	158.9	28.3
11	70-0		9.3		93.4	4.7	56.1					700.7	140.1		70.1	
	300-70		11.4	8.5			93.7		2.8		5.7	130.6	187.3		144.7	
	300-0		3.3		3.3		55.5					74.0	104.5		66.4	8.7
12	55-0		5.9		23.7		65.2					100.7	420.7		88.9	
	300-55		1.3		12.0		14.7					73.3	46.7	4.0	22.7	
	300-0		1.1		26.1		5.4	1.1				46.8	43.5		21.8	3.3
13	40-0	24.6			8.2		41.0					90.2	1665.6		147.7	73.8
	300-40				87.8		123.0	5.0	2.5		2.5	143.1	128.0	5.0	67.8	65.3
	300-0				23.9		35.9		2.2		2.2	46.8	117.6	4.4	31.6	42.4



# Plankton Data, M/V Paragon

## Numbers of Copepods per Cubic Meter of Water

STATION	DEPTH INTERVAL (m)	Acartia	Calanus cristatus	Calanus finmarchicus	Calanus plumchrus	Candacia	Bucalanus bungii	Euchaeta japonica	Gaetanus	Heloptilus	Heterorhabdus	Metridia lucens	Oithona	Pleuronectes	Pseudocalanus minutus	Miscellaneous
14	48-0	245.1	6.8		340.2		40.9					40.9	1531.9		81.7	68.1
	300-48	13.0	1.3		25.9		32.4		1.3			38.9	62.2	5.2	28.5	6.5
	300-0	6.5	1.1		49.0		49.0	1.1	3.3			27.2	44.6	3.3	19.6	5.4
15	300-0				54.4		17.4		2.2		2.2	54.4	119.7	2.2	511.6	115.4
19	38-0				259.5		8.6		43.2			17.3	475.7		285.4	17.3
	300-38				18.7		13.7		5.0			13.7	52.3		21.2	24.9
	300-0	2.2			7.6		6.5					7.6	16.3	1.1	12.0	13.1
20	36-0				270.4			9.0					108.2		495.8	
	300-36				13.6							8.7	53.2		14.9	12.4
	300-0		1.1	1.1	23.9		3.3					17.4	29.4		10.9	10.9
21	45-0			14.5	145.5		36.4					87.3	545.5		181.8	80.0
	300-45				12.8	1.3	2.6					10.2	83.2	2.6	121.6	10.2
	300-0				21.8		27.2	1.1				27.2	326.5		150.2	10.9

Table 4

## Drift Bottle Data

Released:

GCT	Date	Latitude	Longitude	Vessel	Number of Bottles
1030	May 18	53° 54' N.	163° 05' W.	Attu	24
2250	May 27	51 02 N.	175 53 W.	Attu	24
1700	May 31	51 03 N.	178 54 W.	Pioneer	24
0400	June 8	53 00 N.	175 00 W.	Attu	48
0300	June 10	50 00 N.	175 00 E.	Pioneer	24
0300	June 14	53 00 N.	175 00 E.	Pioneer	48
2125	June 15	55 00 N.	175 00 E.	Pioneer	48
1900	June 16	56 00 N.	173 00 W.	Attu	24
0200	June 17	56 00 N.	175 00 E.	Pioneer	24
0200	June 22	53 00 N.	180 00	Pioneer	48
0045	July 8	56 00 N.	165 00 W.	Attu	17
1830	July 15	54 00 N.	160 00 W.	Attu	24
2015	July 16	53 00 N.	170 00 W.	Paragon	24
0015	July 17	52 00 N.	160 00 W.	Attu	24
2000	July 18	50 00 N.	160 00 W.	Attu	24
0144	July 21	50 00 N.	165 00 W.	Attu	24



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